Jan 2016 **Volume 18 No. 1**

The Saudi Journal of Oto-Rhino-Laryngology, Head and Neck Surgery is published semiannually and a copy is sent free to all members of the Society and ORL doctors in the Kingdom of Saudi Arabia. Copies are also sent free to medical school libraries inside and outside the Kingdom.
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This is the official publication of the Saudi Oto-Rhino-Laryngology Society

ISSN:1319-8491 (Legal Deposit No.0857//20)

Accredited as a refereed journal by the Academic Councils of Universties of Saudi Arabia, GCC Countries & Arab Countries

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The Saudi Journal of Oto-Rhino-Laryngology Head and Neck Surgery

Aims and Scope

The Saudi Journal of Oto-Rhino-Laryngology Head and Neck Surgery is the official publication of the Saudi Oto-Rhino-Laryngology Society. It is a scientific medical journal that is published twice a year.

Papers written in English dealing with all aspects of clinical, academic or investigative ORL and research are welcomed. The scope of the journal includes original articles, review articles, editorials ,case reports, letters to the editor, proceedings of conferences, special communications and commentaries.

All submissions are subject to review by the Editor-in-Chief and a panel of referees according to the topic covered by the paper. All articles submitted will be acknowledged by communication to the principal author. All authors must sign the declaration mentioned in the "Instruction for Authors". The article once published, will remain the property of the Saudi Journal of Oto-Rhino - Laryngology. Proof reading will be carried out by the editorial board. All submissions must abide by the standard international code of ethics.

In order to minimize the delay between manuscript submission , decision and publication, authors are requested to follow carefully the instructions set under "Instruction for Authors."

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Obituary

Prof. Mohamed Adel Lotfi

On the 14th November 2015 the ORL community in Saudi Arabia and Egypt lost one of its most liked otolaryngologist. Professor Mohamed Adel Lotfi was born in Egypt on 2nd December 1952.

He graduated from Ain Shams University in December 1975. He went on to obtain his MSc in 1979 and PhD in 1985. He started as a resident in 1976 and went through the grades till he was appointed full professor of ORL in 1995.
He trained in Tubingen, Germany between 1982-1984. He also attended various workshops and training courses in temporal bone dissection, endoscopic sinus surgery and cochlear implants. He was an instructor in a number of training courses. Prof. Lotfi was active in research and published nationally and internationally.

He was a member of the Egyptian ORL Society and was its treasurer for some time. He was a member of IFOS , the Egyptian ORL Society, Saudi ORL Society and editor-in-chief of the Egyptian ENT Journal. At some time in his busy career he was a member of the Egyptian Scientific Committee for the Assessment of ENT Professors.

Between 2002 and 2006 he was appointed chairman and director general of Shaikh Zaid Specialist Hospital in Giza, Egypt. In 2007 he joined the ENT Department of King Faisal University, Dammam, Saudi Arabia as a professor. His tenure there was an active period and he was involved in all activities of the department. He was heavily involved in the courses conducted by the department and examinations for the Saudi ORL Board.

Prof. Lotfi was very popular among his students, residents and colleagues. I had the pleasure of knowing him on the local and international levels. He will be missed by all his patients, students and colleagues.

Prof. Kamal J. Daghistani
Edito-in-Chief

Original Articles

Complications of Cochlear Implantations

Abstract

Background: Cochlear implantation (CI) has become an effective measure for the treatment of many cases with profound deafness. Although it is viewed as a safe technique, minor and sometimes major complication are still taking place after the procedure. The frequency of these complications varies between operating centers. No previous documentation of the frequency of these complications was carried out in Saudi Arabia.

Objectives: This study aimed at describing the pattern of complications following CI in one of the main hospitals in the Kingdom of Saudi Arabia.

Methods: Through a retrospective study design, all medical records of cases who received CI in the period between January 2009 to January 2014 were obtained from the Health Information Department in King Fahd Hospital (n=142); a constructed checklist was used to systematically collect information regarding available demographic characteristics and complications after cochlear implantation.Data were coded and analyzed using Statistical Package for Social Science version 16.0 (SPSS program).

Results: The overwhelming majority of patients were children;128(90%). The overall number of complications following cochlear implantation accounted for 18 cases who represented (12.7%) of all cases. Most of the complications occurred among children making an age adjusted rate of (11.4%). Overall complications were 4(2.8%) spontaneous device failure, 3(2.1%) device failure due to trauma, 2(1.4%) wound infection, 2(1.4%) wound dehiscence, 1(0.7%) hematoma, 1(0.7%) facial twitches, 1(0.7%) post-operative vertigo and 1(0.7%) otitis media.

Conclusion: Cochlear implantation is a safe technique with a relatively low complication rate; the reported rates of complications among our patients are approximately similar to what has been recorded in other health institutions worldwide.

Key words: Cochlear implantation, complications of cochlear, implantation, CI.

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Introduction

Since it was introduced in the early sixties of the 19th century, cochlear implantation passed from being experimental and controversial to a well-established technique which is effective in restoring sound awareness and speech perception among patients with profound sensorineural deafness [1, 2]. As is the case with all other major surgeries cochlear implants carry the risks of complications, in addition to the particular risks associated with implanting a foreign body into the peripheral auditory system [3]. However, compared to most of surgical operations cochlear implantation is fairly a safe procedure with a relatively low complications rate which are typically minor with rare serious or life threatening complications [4]. The complications reflect complexity of the operation and typically are attributed to factors related to surgeon's skills and experience in fixing a large foreign body immediately deep to the scalp [5].

Complications can be classified into either major which necessitate additional surgical intervention or hospitalization or minor, when it can be dealt with in an outpatient clinic or even with no treatment at all [6]. Major complications include meningitis, flap necrosis, device failure, electrode extrusion, facial nerve paralysis and others while minor complications involve facial nerve stimulation, electrode migration, vertigo, tinnitus, and others [7]. Most of the major complications, including electrode problems and facial paralysis, excluding traumatic device failure

are considered avoidable through strict operative and postoperative procedures [8].

Device failure which is known as the functioning part from manufacturer specification in a way that result in loss of clinical benefit is viewed as the commonest complication of cochlear implantation [9, 10, 11]. The reason varies between electronic failure or electrode array problem .In the UK, the rate of device failure accounted for about 4% with a mean time of 60 months in adults and 35 months in children. The causes were mainly "hard device failure" in addition to medical causes such as chronic suppurative otitis media and post-auricular mastoid abscess which constituted the commonest causes of medical failure [12].

The facial recess approach to the mesotympanum places the facial nerve at risk.Although facial nerve injury could be minimized by using a facial nerve monitor, it is not a definite guarantee of avoidance of injury [13]. Facial twitches occur usually from stimulation of the labyrinthine portion of the facial nerve, which lies close to the superior segment of the basal turn [14]. Several authors [15, 16] reported facial paralysis or paresis in their series. Its incidence varies between 0.55% and 3%.Most cases of facial paresis following cochlear implantation demonstrate a delayed onset and have complete recovery within months of surgery. It heralds an excellent prognosis, whereas immediate onset facial paresis prognosticate a poorer outcome [17].

The optimal age for cochlear implantation among children at one year old coincides with the highest frequency of otitis media, by this age almost one half of children might have at least one episode of otitis media; otitis media following cochlear implantation could theoretically potentiate high risk of infectious complications [18].

The trend of complications showed significant changes along the last decades; despite its occurrence at minimal rates, there is relative increase over time in the proportion of adverse events that had "multiple or unknown causes", particularly cases of gradual "idiopathic loss of performance" which call for further research to explore causes of idiopathic and gradual adverse events [19].

This was a retrospective study of the frequency of post-operative complications of cochlear implantation.

Materials and Methods

All medical records of 142 cases who were subjected to consecutive multichannel cochlear implant surgeries in the period between January 2009 to January 2014 were obtained from the Health Information department in King Fahd Hospital, Jeddah, Saudi Arabia. A constructed checklist was used to systematically collect information regarding available demographic characteristics and complications after cochlear implantation.The follow-up time was of at least one yearpost-operative. All cases included in the study were diagnosed with profound hearing loss by audiological evaluation. We excluded 19 patients because of incomplete data & loss of follow up. All patients had unilateral implants.

Cochlear implant surgeries:

Admitting CI candidates in single, visually attractive room with his/her parents

- Prophylaxis antibiotics were given one hour pre-operative till one week post-operative.
- Surgery took place at strict sterile environment with double draping technique
- Post auricular incision, anteriorly based flap with limited subperiosteal pocket for the device base were used
- Meticulous hemostasis
- Continuous electromyographic facial nerve monitoring throughout the operation
- Antibiotic wash before doing cochleostomy
- Cautious electrode handling during insertion
- Cochleostomy was sealed tightly with tissue (temporalis fascia)
- The audiologist checked electrode impedance values & intra operative neural telemetry
- Flap was closed by monofilament absorbable stitches while skin sutured simply closed with non-absorbable monofilament Prolene tape
- Pressure mastoid dressing for the 1st night was applied and changed next day, then every other day till sutures removal one week after the operation.
- All patients were discharged homeafter one week on oral&local antibiotics
- Family was educated about what post CI patient should avoid in the future
- Fitting of speech processor4-6 weeks post-operative and programming started.

Statistical analysis:

Data were coded and analyzed using Statistical Package for Social Science version 16.0 (SPSS program).

Results:

Clinical-epidemiological characteristics:

The patients included in the study came from western, northern and southern areas of the Kingdom of Saudi Arabia. Patients from Jeddah region corresponded to(106=74.6%) of the cases. Other areas corresponded to(36=25.4%). All patients proved audiologically to have severe to profound hearing loss. The patients operated for CI after failure of auditory and language therapy .

Of the 142 surgeries analyzed, the ratio of male and female was (76=53.5%) and (66=46.5%,) respectively. The pediatric range of patients (up to 18 years of age), corresponded to majority of the operated cases(128 = 90%), The mean time of follow up was 24 months. Fifty nine (41.5%) of the patients included in this study had family history of hearing loss & 47(33%) of the parents of all patients had first degree consanguineous marriage. Pre/peri-lingual hearing loss corresponded to 84.5% (120) and post-lingual to 15.5% (22) of the cases. The mean hearing loss time in pre/peri-lingual patients was of 4.2 ±3.7 (1-20) years and of 11.2 ± 10.4 (0.8-50) years in the post-lingual.

The devices utilized were: Nucleus Freedom - Cochlear Corporation, Australia (n = 64),& Concerto- Opus.z , Medel Electronics, Austria(n = 78).

Table I: Surgical complications were classified according to the criteria from Cohen & Hoffman[20]

Complication	No. of patients	%
Major complications		
Device failure (Spontanous+Trauma)	(4+3)	4.9%
Dislodged magnate	1	0.7 %
Wound infection	2	1.4 %
Wound dehiscence	1	0.7 %
Meningitis	0	0 %
Facial nerve paresis or palsy	0	0 %
CSF Gusher	0	0 %
Minor complications		
Hematoma	2	1.4%
Facial twitches	1	0.7 %
Tinnitus	1	0.7 %
Post-operative acute otitis media	1	0.7 %
Chorda Tympani nerve injury	1	0.7 %
Intra operative hemorrhage	1	0.7%

Discussion:

The age adjusted overall rate of major complications accounted in 11 patients (7.7%) in the form of device failure, dislodged magnate, wound infection and wound dehiscence. The rate of minor complications accounted in 7 patients (4.9%) in the form of hematoma, facial twitches, tinnitus, post-operative acute otitis media, chorda tympani nerve injury and Intra operative hemorrhage. The overall rate of complications was (12.7%) which is relatively lower than the complication rate reported by Farinetti et al, [20] in their study which reached up to (19.9%), out of which there were (5%) categorized as being major complications and the rest were minor complications. The results of our center were closer to the findings reported in the USA by Do et al [21], where it was found that the overall complication rate was 11.3% where minor complications occurred in (7.2%) which included wound infection or dehiscence, hematoma formation, delayed facial paresis, and non-auditory stimulation, while the major complications included implant malposition or migration, incorrect device implantation, chronic infection with cholesteatoma and severe vertigo requiring hospitalization. However, our results showed higher rates than what was reported by Do et al; [21] which accounted for (9.1%) and thecomplications were mainly minor.

Although that our study showed that most of the complications occurred among children in contrast to what was found in a study done by Farinetti et al; [20] who mentioned the complication rate was significantly higher in the adult population, that could be attributed to the relatively small number of adult patients in our study (n=14).

The most common indication for cochlear re-implantation is device failure which mostly occurrs among pediatric patients which usually affects a single device [3]. Collectively, the current study showed that device failure was the commonest (4.9%) among all complications, (4 children showed spontaneous failure and 3 children showed traumatic failure). These findings coincide with findings obtained from other studies [10, 11] which considered device failure as the most frequent complication of cochlear implantation. Also, it is closer to the reported global failure rate (4.8%) reported by Côtéet al., [22]. All device failure occurred among children, which support findings of previous studies, which showed significant higher prevalence among children than adult patients [10, 11, 22].

Infections are the most common complication following surgeries especially with the presence of foreign bodies under the skin at the surgery site even though current devices are made from well-tolerated materials, contamination from external micro-organisms still potentiating the development of infection [23]. The global infection rate reported in the literature varies from 1.7% to 16.6% and nearly all studies report infectious complications [24, 25].The results of the current study report 2 of the patients (1.4)% developed wound infection post-operativelly.

Although facial nerve injury could be minimized by strict surgical maneuver and monitoring, yet it is not a sure guarantee of avoiding injury [13]. In the current study, facial twitches were reported in one patient (0.7%) which comes within the range reported before in most studies (0.55% and 3%) [15, 16] and slightly higher than what was reported by Thom et al., (0.1%) [17].

Although otitis media is common among children especially at the age between 1-3 years for cochlear implantation, yet its reported frequency after cochlear implantation is low [18]. In the current study, only one

patients (0.7%) developed otitis media which comes in congruence with what was reported by Li etal., [14]. Cerebrospinal fluid (CSF) gusher during cochlear implantation can produce surgical difficulties and postoperative life-threatening morbidities such as meningitis, total or partial defect of the modiolus increase significantly the risk of CSF gusher [26]. Li et al., [4] mentioned that (1.15%) of patients who received cochlear implantation encountered severe CSF gusher during the surgery. In the current study, no CSF gusher was detected.

Conclusion

Cochlear implantation is a safe hearing rehabilitation surgical technique associated with a low complication rate. Complications that principally occurred in children were mainly minor and included wound infection, wound dehiscence, hematoma, facial twitches, post-operative vertigo and otitis media. Major complications include device failure. Awareness of complications helps clinicians to adopt specific preventive measures and immediate interventions so that the outcome will be successful.

References

1. Chung D, Kim AH, Parisier S, Linstrom C, Alexiades G, Hoffman R,. Revision cochlear implant surgery in patients with suspected soft failures. **Otology & Neurotology**. 2010;31(8):1194-8.
2. Buchman CA, Higgins CA, Cullen R, Pillsbury HC. Revision cochlear implant surgery in adult patients with suspected device malfunction. **Otology & Neurotology**. 2004;25(4):504-10.
3. Alexiades G, Roland JT, Jr., Fishman AJ, Shapiro W, Waltzman SB, Cohen NL. Cochlear reimplantation: surgical techniques and functional results. **Laryngoscope**. 2001;111(9):1608-13.
4. Li S, Qin Z, Zhang F, Li L, Qi S, Liu L. Early complications following cochlear implantation in children and their management. **International journal of pediatric otorhinolaryngology.** 2014.
5. Stamatiou GA, Kyrodimos E, Sismanis A. Complications of cochlear implantation in adults. **Annals of Otology Rhinology and Laryngology-Including Supplements.** 2011;120(7):428.
6. Webb RL, Lehnhardt E, Clark GM, Laszig R, Pyman BC, Franz BKH. Surgical complications with the cochlear multiple-channel intracochlear implant: experience at Hannover and Melbourne. **Scientific publications**, Vol 5, 1989-1990, No 385. 1991.
7. Júnior L, Penna LR, Rodrigues Júnior Fd, Calhau CMDF, Calhau AC, Palhano CT. Postoperative complications in implanted patients in the Cochlear Implant Program of Rio Grande do Norte-Brazil. **Brazilian journal of otorhinolaryngology**. 2010;76(4):517-21.
8. Ikeya J, Kawano A, Nishiyama N, Kawaguchi S, Hagiwara A, Suzuki M. Long-term complications after cochlear implantation. **Auris Nasus Larynx**. 2013;40(6):525-9.
9. European consensus statement on cochlear implant failures and explantations. Otology & neurotology : official publication of the American Otological Society, **American Neurotology Society [and] European Academy of Otology and Neurotology**. 2005;26(6):1097-9.
10. Achiques MT, Morant A, Muñoz N, Marco J, Llópez I, Latorre E, et al. Cochlear implant complications and failures. **Acta Otorrinolaringologica (English Edition).** 2010;61(6):412-7.
11. Battmer R-D, O'Donoghue GM, Lenarz T. A multicenter study of device failure in European cochlear implant centers. **Ear and hearing.** 2007;28(2):95S-9S.
12. Masterson L, Kumar S, Kong JH, Briggs J, Donnelly N, . Cochlear implant failures: lessons learned from a UK centre. **J Laryngol Otol**. 2012;126(1):15-21.
13. Green K, Bhatt Y, Saeed S, Ramsden R. Complications following adult cochlear implantation: experience in Manchester. **The Journal of Laryngology & Otology**. 2004;118(06):417-20.
14. Lo W. Imaging of cochlear and auditory brain stem implantation. **American journal of neuroradiology**. 1998;19(6):1147-54.
15. Kubo T, Matsuura S, Iwaki T. Complications of cochlear implant surgery. **Operative Techniques in Otolaryngology-Head and Neck Surgery**. 2005;16(2):154-8.
16. Roland J. Complications of cochlear implant surgery. **Cochlear Implants New York, NY, Thieme**. 2000:171-5.
17. Thom JJ, Carlson ML, Olson MD, Neff BA, Beatty CW, Facer GW, . The prevalence and clinical course of facial nerve paresis following cochlear implant surgery. **The Laryngoscope**. 2013;123(4):1000-4.
18. Preciado D, Choi S. Management of acute otitis media in cochlear implant recipients: To tube or not to tube? **The Laryngoscope.** 2012;122(4):709-10.
19. Causon A, Verschuur C, Newman TA. Trends in cochlear implant complications: implications for improving long-term outcomes. **Otology & Neurotology**. 2013;34(2):259-65.
20. Farinetti A, Ben Gharbia D, Mancini J, Roman S, Nicollas R, Triglia JM. Cochlear implant complications in 403 patients: Comparative study of adults and children and review of the literature. **European Annals of Otorhinolaryngology, Head and Neck Diseases**. 2014.
21. Do JB, Handler EB, Rasgon BM. Cochlear Implantation in a Residency Training Program: The Kaiser Permanente Oakland Experience. **Otolaryngology-Head and Neck Surgery.** 2013;149 (2 suppl):219-20.
22. Côté M, Ferron P, Bergeron F, Bussières R. Cochlear reimplantation: causes of failure, outcomes, and audiologic performance. **The Laryngoscope.** 2007;117(7):1225-35.
23. Hirsch BE, Blikas A, Whitaker M. Antibiotic prophylaxis in cochlear implant surgery. **The Laryngoscope**. 2007;117(5):864-7.

Prevalence of laryngo-pharyngeal reflux diseases (LPRD) in male teaching staff of Jeddah, Saudi Arabia

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Abstract
Objective: To determine the prevalence of laryngo-pharyngeal reflux diseases (LPRD) in male teaching staff of Jeddah, Saudi Arabia.
Methods: A cross -sectional study was conducted on 258 male teachers, both from private and public sectors. All were above 18 years of age, 162(62.8%) from private sector while 96 (37.2%) were from public sector. All participants completed a questionnaire about their dietary habits, height and weight, presence of stress, smoking and allergies, including the nine-item Reflux Symptom Index (RSI). Those who had RSI >13, were invited to King Abdul Aziz University ENT OPD for their free checkup. This included detailed history, local and systemic examination supplemented by Rigid Laryngoscopy, performed by 2 otolaryngologists, an otolaryngologist, a laryngology fellow, and an otolaryngology resident for physical findings of LPR using the Reflux Symptom Index score (RFS).The participants who had RFS score >7 considered to be positive. The LPRD labeled on the basis of RSI score >13 and RFS score >7.
Results: Of the 258 male teachers studied, the prevalence of LPRD was 142 (55%), out which 109 from private sectors while 33 form public sectors (67.2% vs. 34.37%, P < 0.0001). The working hours were more in private sector teaching staff as compared to public sector (72 +/- 8 Vs 48 +/- 4, p- < 0.0001). The other clinical variables did not differ significantly.
Conclusion: There is higher prevalence LPRD among teachers that reflects heavy burden on their vocal cords. Because of more working hours in private sector there is more prevalence in this group. Future studies will be needed to clarify whether LPRD in teachers is stress-induced and therefore may be considered as a work-related disease.
Keywords: Teachers, laryngo-pharyngeal reflux diseases.

Introduction

Gastroesophageal reflux disease (GERD) is a complex problem in the adult population and has received significant attention in the literature. Extra esophageal reflux disease, commonly called laryngopharyngeal reflux disease (LPRD), continues to be an entity with more questions than answers. Although the role of LPRD has been implicated in various adult diseases, it has been inadequately studied in others. It is thought to be one of the major occupational hazards of school teaching, because the teachers often use their voice with high-intensity, in noisy classes, for a long time and without suitable breaks [1].

Although the exact prevalence is unknown, it has been reported in up to 10% of patients presenting to an otolaryngologist's office [2] and more than 50% of patients with hoarseness have been found to have reflux-related disease [3].

LPRD is defined by the reflux of either gastric acid or refluxate (containing pepsin) into the larynx, oropharynx, and/or nasopharynx. Although once believed to be an extension of gastroesophageal reflux disease, the differences in symptoms, findings, and treatments has led to the evolution of LPRD as a unique and distinct disease process. It may be manifested as laryngeal symptoms as well as laryngoscopic findings. The pattern of reflux is different in LPR and GERD. LPR usually occurs during the daytime in the upright position, whereas GERD takes place more often in the supine position at night-time or during sleep. The most common symptoms associated with LPRD are hoarseness, dysphagia, globuspharyngeus, chronic throat clearing, cough and excessive throat mucus [4]. Common laryngeal findings of LPRD are localized or diffuse laryngeal edema, opalescence and/or hypertrophy of the posterior commissure, erythema, granulation and sometimes, granuloma formation. Classic posterior laryngitis (red arytenoids and piled-up inter-arytenoid mucosa) is not seen in most patients with LPRD. Instead, laryngeal edema, not erythema, is by far the most common laryngeal finding. LPRD has been reported to be associated with a host of laryngeal conditions, including muscle tension (functional), dysphonia, subglottic stenosis, laryngospasm,

pachydermia, leukoplakia and vocal cord carcinoma [5].

Despite the recognition that GERD can provoke laryngeal symptoms, the diagnosis of LPRD remains a very difficult task. The difficulty in making a diagnosis is that the findings are sometimes quite subtle; signs of inflammation and irritation are absent, and patients may have a normal-looking larynx. Therefore, a high index of suspicion is needed. There are several controversies regarding how to confirm LPR diagnosis. Upper gastrointestinal endoscopy has been demonstrated to have low sensitivity [6]. The proton pump inhibitor test has been shown to have low specificity [7], and radiologic studies have limited sensitivity and specificity [6]. Regarding the gold standard investigation, the American Gastroenterological Association has taken the following position with regard to extra esophageal reflux: "there are presently no prospective data showing that ambulatory esophageal ph monitoring can identify either patients with laryngitis or asthmatics that are likely to respond to anti-reflux therapy" [8]. With the huge patient load and lack of cost effectiveness in available tests, a clinical diagnosis with a trial of medical management stands out as an effective option. Therefore, accurate diagnosis based on history is a challenge. Belafsky et al [9] developed the reflux symptom index (rsi), a self-administered nine-item questionnaire to help categorize the severity of LPR. A score more than 13 is considered positive.

The final diagnosis of LPR is usually performed by ENT surgeons in case of detection of the following laryngoscopic findings: erythema, oedema, ventricular obliteration, post-cricoids hyperplasia and pseudosulcus [10]. These patients may present with one or all of these findings and these laryngoscopic findings may also be present in healthy volunteers. Reflux finding score (rfs) may be useful in categorizing the severity of the mucosal injury on laryngoscopy. a total score of 7 is thought to be clinically significant[11].

Although LPRD is now a widely recognized clinical entity, but at present few data are available on the prevalence of LPR and the incidence of this disease process remains unknown. To the best of our knowledge, there is no data from the Middle East regarding their prevalence among teachers.

The aim of this study was to assess the prevalence of laryngopharyngeal reflux disease in teachers of Jeddah City, Saudi Arabia.

Material and Methods

Subjects: A prospective analysis of two hundred and fifty eight male teachers, all above 18 years of age, from both private as well as from public sectors, had participated in this study. out of which 162 (62%) were from private schools while 96 (37.2%) were from public schools.

After obtaining approval from the institutional research review board and from ministry of education, a study was planned, in which a common self-administered questionnaire, the reflux symptom index (rsi) developed by Belafsky et al. [9], was used during the interview in schools in Jeddah city male sections for symptom assessment. The scoring of the reflux symptom index was done by the patients and those having a severity score of higher than 13 were included in the study and those with a score less than 13 were excluded.

The teachers of these two sectors were also compared with each other with regard to their age, dietary habits, and presence of stress, smoking, allergies, body-mass index, and other factors affecting voice quality.

Patients having rsi score greater than 13 were invited to the King Abdul Aziz University Hospital, ENT out patient department for their free checkups. Evaluation included detailed history with special focus on possible risk factors. Systemic examination was done to rule out any major pathology. Local examination of the nose, ear, oral cavity, oropharynx, and endolarynx was done. Clinical evaluation was supplemented by rigid laryngoscopy. All stroboscopy segments were evaluated by two laryngologists, an otolaryngologist, a laryngology fellow, and an otolaryngology resident for physical findings of LPR using the reflux symptom index score (rfs) and posterior erythema grade (pe grade). The relationship between the reflux symptom index score and the possible risk factors for reflux was also estimated.

Diagnostic Criteria

For the purpose of this study, the diagnosis of LPRD was based on two things: first the history based rsi score and second laryngosopy based rfi score. Subject with a summed up rsi larger than 13 were considered to be positive [9] and the rfs scores ranged from 0 (normal) to 26 (worst), the score in total of more than 7 is regarded as positive [11].

Statistical Analysis

The data obtained were entered into a database and processed with the program statistical package for social sciences (spss version 20, spss inc, chicago, ii usa). Various statistical methods were applied depending on the type of variable analyzed: goodness-of-fit to a normal distribution (kolmogorov-smirnov), hypothesis contrast of two averages (fisher-student's t test or mann-whitney's u test), lineal correlation analysis (pearson's r or spearman's r), analysis of frequencies and comparison of proportions (pearson's x2 test or his likelihood ratio).a p value < 0.05 was considered significant.

Results

Table I shows the demographic characteristic of teachers from both sectors of school with and without laryngeal symptoms and laryngopharyngeal reflux using rsi and rfs score. A total of 144 of 258 were above 40 years of age while rest of were less than 40 years of age.((55.8% vs 44%, p- ns). although 180 (69.7%) were smokers but there was no statistically significant difference between these two groups (69.1% vs 70.8%, p-ns). Working hours were significantly more in private sector group as compared to public sector group(72 +/- 8 vs 48+/- 4, p <0.0001). out of 162 private sector teachers, 119

(73.4%) had rsi score >13 as opposed to 44 (45.8 %) public sector teachers, who had rsi <13.
The prevalence of LPRD among teachers was 142 (55%) , 109 (67.2%) were from private sector while 33 (34.7%) from public sector (Table II).

Table I. demographic characteristic of the teachers with and without laryngeal symptoms using rsi and rfs score

	Private sector n=162 (62.8%)	Public sector n=96 (37.2%)	Total n=258	P value
Age				
<40	72 (44.4%)	42 (43.7%)	114 (44.1%)	na
>40	90 (55.5%)	54 (56.25%)	114 (55.8%)	na
smoker	112 (69.1%)	68 (70.8%)	180 (69.7%)	na
teaching hours per week	72+/-8	48+/-4	60+/-	<0.0001
rsi score				
<13	43 (26.5%)	52 (54.1%)	95 (37.1%)	na
>13	119 (73.4%)	44(45.8%)	163 (63%)	< 0.0001
rfs score				
<7	53 (32.7%)	63 (56.6%)	116 (44%)	na
>7	109 (67.2%)	33 (34.37%)	142 (55%)	< 0.0001

Table II: Positive stepping test cases

	LPRD positive patients n=142 (55%)	LPRD negative patients n=116 (44%)
private patients	109 (67.2%)	53 (65.6%)
public patients	33 (34.7%)	63 (65.6%)

Discussion

Teachers are more likely to develop voice disorders compared to non-teachers in other occupations.[12]. They are often cited as a high-risk group for vocal dysfunction.

The prevalence of vocal problems and the self-perception of these voice problems by the teachers varies across literature. Such variability in figures has precluded adequate planning for occupation safety services and preventive programs. Even though there are many articles [13-15, 16] on the prevalence of voice disorders in teachers, they only indicate that voice difficulties are a significant problem for teachers which is exactly what the teachers themselves say in their self-evaluations done by mail [14-15] or over the phone [13-16]. But, just like Mattiske et al [17] and Sala et al [16] we believe it is impossible to know the exact prevalence of voice disorders in teachers if a random sample is not selected from the chosen teaching population and if besides answering a questionnaire, we do not corroborate the existence of a vocal pathology by means of objective methods, particularly the laryngoscope. The majority of data showed an association between an overall vocal problems in teachers but there is not much literature regarding specifically LPR prevalence among these, so we cannot compare this result to results in published literature.

The result of this study demonstrate that LPR is a relatively common disorder in that it was present in more than half of our teachers as opposed to Hocevar [18] that showed only 6.33% prevalence of reflux among teachers. This may be because the sample size of his study was less and LPR diagnosed only on the basis of rsi score only, they did not undergo rigid laryngoscopy. Koufman [19] also found a higher prevalence of reflux (50%) in patients with laryngeal and voice disorders, but that study was done on the general population. Preciado [20] also showed high prevalence of voice disorders among teaching staff of La Rioja, Spain (57%) similar to Hamdan [21] that showed 46% prevalence. Nevertheless, results do suggest that LPR is ubiquitous in teachers and that clinicians seeing such group specifically for the sign and symptoms of LPR.

We believe that vocal pathology is more common in women than in men [14-15] because women have a smaller larynx than men, by the greater vocal effort that women must make to raise their voices and the greater vibration of the vocal cords in women that leads to greater vocal cord trauma. but all of the participants in our study are male besides that we found a high prevalence, shows that gender itself is not much responsible for voice disorders in teachers.

Our study included teachers both from private as well as from public sector and there is more prevalence of LPR in private sector group that was statistically significant. This is because of more working hours of private sector teachers presenting stress content of the job.

Conclusion

The occurrence of voice disorders is significantly associated with work ability, which may eventually

compromise teachers' ability to continue working. LPRD should be considered as a chronic disease with a variety of presentations. High clinical suspicion along with consultation with an otolaryngologist, who can evaluate for laryngeal findings, is necessary to accurately diagnose LPRD. Future studies will work to illuminate the role of gastric acid and refluxate on the upper aerodigestive tract. However, until excluded, the role of LPRD should never be underestimated and should always be treated in symptomatic patients.

References

1. Smith E, Gray S, Dove H, Kirchner l, Heras H. Frequency and effects of teacher's voice problems. **J Voice**. 1997;11:81-87.
2. Koufman JA. The otolaryngologic manifestations of gastroesophageal reflux disease (GERD): A clinical investigation of 225 patients using ambulatory 24-hour ph monitoring and an experimental investigation of the role of acid and pepsin in the development of laryngeal injury. **Laryngoscope**. 1991;101(4 pt 2 suppl 53):1-78.
3. Hopkins C, Yousaf U, Pedersen M. Acid reflux treatment for hoarseness [protocol]. **Cochrane Data Base Syst Rev.** 2005 (3) accession no. 00075320-10000000.
4. Wiener GI, Cooper JB, Wu WC, et al. Is hoarseness an atypical manifestation of gastroesophageal reflux (ger)? An ambulatory 24-hour ph study [abstract]. **Gastroenterol**. 1986;90a:1691.
5. Morrison MD. Is chronic gastroesophageal reflux a causative factor in glottic carcinoma. **Otolaryngol Head Neck Surg**. 1988;99:370-3.
6. Lacy BE, Weiser K, Chertoff J, Fass R, Pandolfino JE, Richter JE, Rothstein RI, Spangler C, Yaezi MF. The diagnosis of gastroesophageal reflux disease. **Am J Med**. 2010;123:583–592.
7. Aanen MC, Weusten BL, Numans ME, De Vit NJ, Baron A, Smout AJ. Diagnostic value of the proton pump inhibitor test for gastro-oesophageal reflux disease in primary care. **Aliment Pharmacol Ther**. 2006;24:1377–1384.
8. Hanson DG, Jiang JJ. Diagnosis and management of chronic laryngitis associated with reflux. **Am J Med**. 2000; 108(suppl 4a):112s–119s.
9. Belafsky PC, Postma GN, Koufman JA. Validity and reliability of the reflux symptom index (rsi). **J Voice**. 2002;16:274–277.]
10. Vaezi MF, Hicks DM, Abelson TI, Richter JE. laryngeal signs and symptoms and gastroesophageal reflux disease (GERD): a critical assessment of cause and effect association. **Clin Gastroenterol hepatol**. 2003;1:333–344.
11. Belafsky PC, Postma GN, Koufman JA. The validity and reliability of the reflux finding score (rfs). **Laryngoscope**. 2001;111:1313–1317.
12. Martins RH, Pereira ER, H, Tavares EL. Voice disorders in teachers. A review. **J Voice**. 2014; 28(6):716-24.
13. Bonet M. Oferta I. Demanda de la logopedia i de lafoniatria a catalunya. Tesis doctoral. **Universidad de Barcelona**. 1985.
14. Smith E, Kirchner l, Taylor M, Hoffman H, Lemke J. Voice problems among teachers: differences by gender and teaching characteristics. **J Voice**. 1998;12:328-334.
15. Preciado J, García-Tapia R, Infante J. Estudio de la prevalencia de los trastornos de la voz en los profesionales de la enseñanza. factoresque intervienen n suaparición on sumantenimiento. **Acta Otorrinolaringol Esp**. 1998;49:137-142.
16. Sala E, Laine A, Simberg S, Pentti J, Suonpää J. The prevalence of voice disorders among day care center teachers compared with nurses: A questionnaire and clinical study. **J Voice**. 2001;15:413-423.
17. Mattiske J, Oates J, Greenwood K. Vocal problems among teachers: a review of prevalence, causes, prevention and treatment. **J Obice**. 1998;12:489-499.
18. Hočevar-boltežar I, Sereg-bahar M, Kravos A, Mumović G, Mitrović S. Is an occupation with vocal load a risk factor for laryngopharyngeal reflux: a prospective, multicentre, multivariate comparative study. **Clin Otolaryngol**. 2012 ;37(5):362-8
19. Koufman JA, Amin MR, Panetti M. Prevalence of reflux in 113 consecutivepatients with laryngeal and voice disorders. **Otolaryngol Head Neck Surg**. 2000; 123(4):385-8.
20. Preciado J, Pérez C, Calzada M, Preciado P. Prevalence and incidence studies of voice disorders among teaching staff of larioja, Spain. Clinical study: questionnaire, function vocal examination, acoustic analysis and video laryngostroboscopy. **Acta Otorrinolaringol Esp**. 2005 ;56(5):202-10.
21. Hamdan Al, Sibai AM, Srour ZM, Sabra OA, Deeb RA. Voice disorders in teachers. The role of family physicians. **Saudi Med J**. 2007; 28(3):422-8.

Endoscopic dacryocystorhinostomy without stenting tube

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Abstract

Background: Nasolacrimal duct obstruction is a common condition encountered by both ophthalmologist and otolaryngologist with symptoms such as epiphora and recurrent dacryocystitis. The treatment of choice is opening with the lacrimal sac to pass by the obstruction (dacryocystorhinostomy). Most surgeon shift to endoscopic approach instead of the external approach. A lot of varieties in surgical procedures have been described. Our aim in this study was to analyze the success rate in endoscopic dacryocystorhinostomy without using silicon tubes as a stent at the end of surgery.

Material And Methods: This was a prospective study carried out between the months of January 2011 to December 2013, which included 40 patients. All patients who were diagnosed as having only nasolacrimal duct obstruction were included in this study and underwent 50 endoscopic endonasal dacryocystorhinostomy without using silicone tube at the end of the procedure.

Results: Forty adult patient underwent endoscopic dacryocystorhinostomy(EDCR) procedure without insertion of silicone tube at the end of the procedure. There were 16 males (40%) and 24 females (60%). Age ranged between 24 years to 80 years. Eighteen (45%) patient had Left EDCR, 12 (30%) patient had Right EDCR and 10 (25%) patient had bilateral EDCR. The follow up period ranged from 6 months to 19 months.

Measures that determined the successful outcome include; relief of symptoms, endoscopic visualization of the patent neo-ostium and sac syringing. Thirty sex patients (90%) fulfilled the criteria of successful outcome.

Conclusion: Our results and experience suggest that endoscopic darcryocystorhinostomy without stenting offers the same success rate of primary surgery over EDCR with tube stenting.

Keywords: Dacryocystorhinostomy, endoscopic dacryocystorhinostomy, EDCR, nasolacrimal duct, lacrimal stent.

Introduction

Nasolacrimal duct obstruction is one of the diseases encountered in otolaryngologist and ophthalmologist clinics [1, 2, 3, 4]. Excessive tearing (epiphora) is the main symptom in most cases of chronic dacryocystitis [5] in addition to recurrent dacryocystitis and abscess formation. Causes could be unknown (idiopathic) or either congenital obstruction or acquired [6]. In most cases the etiology is unknown [7]. Examples of acquired causes include recurrent dacryocystitis and canaliculitis, dacryolithiasis, lacrimal system tumors, nasal pathology obstructing drainage and trauma, which may be iatrogenic.

Dacryocystorhinostomy in simple definition is fistulization of the lacrimal sac into the nasal cavity. This procedure started historically by external approaches [8]. The first clinical study on an endoscopic DCR technique appeared in 1989 by McDonogh and Meiring [9] and modified with in time to endo-nasal and most of nowadays procedures are by endoscopic endo-nasal approach.In the last 15 years, endonasal dacryocystorhinostomy (End-DCR) has become an alternative to external dacryocystorhinostomy [10].

The advantage of the endoscopic approach are good aesthetic result, lack of external scars, preserving pumping mechanism of orbicularis oculi muscle, and shorter operation time. The main two disadvantages of endoscopic approach are need of special training on using the scope and the expense of endoscopic equipment [11, 12]. The most common cause of a surgical failure in endoscopic DCR is obstruction of the neo-ostium by granulation tissue or synechia that forms post-operatively [13].

This was a prospective study to analyze the success rate in endoscopic dacryocystorhinostomy without using silicon tubes as a stent at the end of surgery.

Material and methods

This prospective study was carried out between the months of January 2011 to December 2013 and included 40 patients. All patients who were diagnosed as having only nasolacrimal duct obstruction were included in this study and underwent 50 endoscopic endonasal dacryocystorhinostomy without using silicone tube at the end of the procedure.

Post operatively patients were followed in the clinic. Patient investigated by history and examination with zero degree scope, for any symptoms of recurrence e.g. tearing, recurrent dacryocystitis or abscess collection. Endoscopy was done to visualize new lacrimal stoma patency. Criteria of successful outcome were relief of symptoms, endoscopic visualization of the patent neo-

ostium, and sac syringing.

Results:

Forty adult patient underwent endoscopic dacryocystorhinostomy (EDCR) procedure without insertion of silicone tube at the end of the procedure. There were 16 males (40%) and 24 females (60%). Age distribution ranged from 24 years to 80 years. Eighteen (45%) patient had left EDCR, 12 (30%) patient had right EDCR and 10 (25%) patient had bilateral EDCR. The follow up period ranged from 6 months to 19 months.

Measures to determine the successful outcome included relief of symptoms, endoscopic visualization of the patent neo-ostium and sac syringing. Thirty sex patients (90%) fulfilled the criteria of successful outcome. Septoplasty was done in 24 patients to get access during the procedure, Partial inferior turbinectomy in 7 patients to relieve concurrent symptoms of nasal obstruction.

Discussion:

Dacryocystorhinostomy (DCR) is a surgical procedure aimed, most commonly, at the relief of chronic epiphora, frequently observed in cases of chronic dacryocystitis and in patients with lacrimal sac or nasolacrimal duct (NLD) obstruction [13].

In recent years, with the development of new surgical instruments, treatment has evolved, and nowadays an endonasal endoscopic technique is the approach of choice in most cases [13].

The advantage of endoscopic approach are good aesthetic result, lack of external scars, preserving pumping mechanism of orbicularis oculi muscle, and shorter operation time [7, 8].

Proper management of nasolacrimal duct obstruction starting by confirmation and localization of obstruction and excluding obstruction proximal to nasolacrimal sac.

Diagnosis of nasolacrimal duct obstruction made in our study with simple methods by utilizing clinical history and examination, all patient referred to ophthalmologist to confirm the diagnosis by irrigation and/or probing of lacrimal system. We do not request CT scan routinely for straight forward cases. We excluded from our study any patient with pre-saccal stenosis, lower eye lid problem, traumatic bony deformity, or Patient suspected to have neoplasm.

After confirming the diagnosis we book the patient for elective endoscopic dacryocystorhinostomy (EDCR). Patients underwent assessment by anesthesia clinic for fitness for general anesthesia prior to surgery. Admissions was done on to the day surgery unit at the same day of operation. All surgeries were done/ supervised by one rhinologist consultant.

The literatures describe many techniques of performing EDCR , in our study we do local injection with diluted adrenalin in normal saline 1:100,000 followed by nasal packing with decongestant (Xylometazoline) for 5-10 minutes. After removal of packing we raise a posteriorly based flap at the level of axilla of the middle turbinate on the maxillary line. Then by using Freer dissector we elevate the flap from the bone so as to expose the ascending maxillary process and lacrimal bone. Biting of maxillary process was done by using electric burr or Kerrison (Rongeur) Forceps. The exposed medial wall of the lacrimal sac will be opened widely. No stenting or mitomycin C was used at the end of procedures.

Patients were seen post operatively in the day surgery unit and examined for any active bleeding or any active issues. Patients were discharged on the same day of procedure on antibiotics, analgesia, and normal saline nasal irrigation and topical decongestant.

First follow up was scheduled within 2 weeks post operatively. In the follow up visits patient were evaluated for symptoms relief, and examined endoscopically for patency of the new lacrimal stoma. Patient with symptoms improvement and patent lacrimal stoma by visualization and irrigation were be included in the successful group. Otherwise the procedure will be considered a failed procedure.

In literatures successful outcome of EDCR with stenting ranged between 83% to 98% in primary cases with different techniques [9, 10, 11, 15, 16]. In our study successful outcome was 90%, and we do not use stenting. Our successful outcome is comparable to the result of others with using silicon stent or using different approaches.

Conclusions:

Based on our results from this study we suggest that endoscopic darcryocystorhinostomy without tube stenting offers the same success rate of primary surgery over Endoscopic DCR with tube stenting.

References

1. Hartikainen J, Antila J, Varpula M, Puukka P, Seppa H, Grenman R. Prospective randomized comparison of endonasal endoscopic dacryocystorynostomy and external dacryocystorhinostomy. **Laryngoscope**. 1998;108:1861-6.
2. Dietrich C, Mewes T, Kuhnemund M, Hashemi B, Mann WJ, Amedee RG. Long-term follow-up of patients with microscopic endonasal dacryocystorhinostomy. **Am J Rhinol**. 2003; 17:57-61.
3. Onerici M. Dacryocystorhinostomy. Diagnosis and treatment of nasolacrimal canal obstruction. **Rhinology**. 2002;40:49-65.
4. Berlucchi M, Staurenghi G, Rossi Brunori P, Tomenzoli D, Nicolai P. Transnasal endoscopic dacryocystorhinostomy for the treatment of lacrimal pathway stenoses in pediatric patients. **Int J Ped Otorhinolaryngol**. 2003;67:1069-74
5. Emanuelli E, Pagella F, Dané G, Pusateri A, Giourgos G, Carena P, Antoniazzi E, Verdecchia P, Matti E: Posterior lacrimal sac approach technique without stenting in endoscopic dacryocystorhinostomy. **Acta Otorhinolaryngol Ital**. 2013t; 33(5): 324–328.
6. Muscatello L1, Giudice M, Spriano G, Tondini L. Endoscopic dacryocystorhinostomy: personal experience. **Acta Otorhinolaryngol Ital**. 2005 ;25(4): 209–213.

7. Milojević M1, Avramović S, Kostić B, Sotirović J, Perić A.: Endoscopicdacryocystorhinostomy. **Vojnosanit Pregl**. 2010;67(6):463-7.
8. Toti A. Nuovo metodo conservatore di cura radicale delle suporazioni croniche del sacco lacrimale. Clin Med Firenze. 1904;10:385-9
9. McDonogh M, Meiring JH. Endoscopic transnasaldacryocystorhinostomy. **J Laryngol Otol**. 1989;103:585–587.
10. Codère F1, Denton P, Corona J. Endonasaldacryocystorhinostomy: a modified technique with preservation of the nasal and lacrimal mucosa. **Ophthal Plast Reconstr Surg**. 2010 ;26(3):161-4.
11. Presutti L. Endonasal dacryocystorhinostomy. **Acta Otorhinolaryngol Ital**. 1995;15:449-53.
12. Puxeddu R, Nicolai P, Bielamowicz S, Serra A, Puxeddu P. Endoscopic revision of failed external dacryocystorhinostomy. **Acta Otorhinolaryngol Ital**. 2000;20:1-5.
13. Ben Simon GJ, Joseph J, Lee S, Schwarcz RM, McCann JD, Goldberg RA. External versus endoscopic dacryocystorhinostomy for acquired nasolacrimal duct obstruction in a tertiary referral center. **Ophthalmology**. 2005;112:1463–1468.
14. PiédrolaMaroto D1, Franco Sánchez J, Reyes Eldblom R, Monje Vega E, Conde Jiménez M, Ortiz Rueda M.Endonasal versus trans-canalicular endoscopic dacriocystorhinostomy using diode laser. Surgical techniques and outcomes. **Acta Otorrinolaringol Espanol**. 2008 Jun-Jul; 59(6):283-7.
15. Cokkeser Y1, Evereklioglu C, Er H. Comparative external versus endoscopic dacryocystorhinostomy: results in 115 patients (130 eyes). **Otolaryngol Head Neck Surg**. 2000 ;123 (4):488-91.
16. Penttilä ESmirnov G, Seppä J, Kaarniranta K, Tuomilehto H.: Mitomycin C in revision endoscopic dacryocystorhinostomy: a prospective randomized study. **Am J Rhinol Allergy.** 2011; 25(6):425-8.

Saudi Journal of Oto-Rhino-Laryngology Head and Neck Surgery Volume 18 No. 1, Jan. 2016

Clinical outcomes following graftless four-quadrant cricoid division laryngotracheal reconstruction

Abstract

Objective: To review the clinical outcomes of patients with subglottic stenosis treated using a graftless four-quadrant cricoid division laryngotracheal reconstruction technique.

Materials and Methods: This study is a retrospectivereview of 20 patients with subglottic stenosis who underwent graftless four-quadrant cricoid division laryngotracheal reconstruction during an 8-year period (2006-2013) at a single tertiary care center.

Results: During the study period, 20 patients (13 males and 7 females) aged 6 months to 48 years underwent this procedure. Of these, 60% had other comorbid diseases. Using the Myer Cotton Grading System, one patient had grade II subglottic stenosis, 12 had grade III, and seven had grade IV subglottic stenosis. All patients underwent graftless four-quadrant cricoid division laryngotracheal reconstruction with the insertion of a Montgomery T-tube stent. Two patients had a successful outcome, defined as successful decannulation and no further surgeries needed; 16 patients required additional intervention; and two patients required a permanent tracheostomy. Two patients were lost to followup.

Conclusion: The findings of the current study demonstrate that graftless four-quadrant cricoid division laryngotracheoplasty often requires further surgical intervention to resolve the stenosis.

Key words: laryngotracheoplasty, subglottic stenosis, four-quadrant cricoid division, laryngotracheal reconstruction.

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Introduction

Laryngotracheal stenosis (LTS) is associated with a high degree of morbidity, and the management of patients with LTS is challenging. Cotton and colleagues believe that "The problem of pediatric laryngotracheal stenosis includes a constellation of types of stenosis and various techniques for surgical management. In all cases, the orientation and location of the stenosis (anterior, posterior, lateral, or circumferential) must be evaluated carefully" [1, 2].

Treatment options for early LTS consist mostly of medical therapy with or without endoscopic intervention. Medical therapy includes the treatment of any underlying conditions, such as infection or gastroesophageal reflux disease, which would hinder laryngeal recovery. Oral, intravenous, or inhaled steroids and adrenaline nebulizers can help optimize the airway [3]. Endoscopic treatment is being used increasingly often and is beneficial for addressing soft, immature, and mild forms of stenosis. The recurrence rate can reach 70% after endoscopic dilation [4]. There is a wide range of open surgical modalities that can be used to manage advanced LTS cases, including cricoid division, laryngotracheoplasty (LTP) without a cartilage graft, LTP with a costal cartilage graft, and partial cricotracheal resection. Selection of the most appropriate surgical modality is critical [5]. The current study sought to assess the efficacy of graftless four-quadrant cricoid division LTP in our tertiary care center, compare the outcomes of these surgeries to the literature, and report our experience using this surgical modality for managing subglottic stenosis.

Methods

We retrospectively reviewed the medical charts of 20 patients who were diagnosed with subglottic stenosis and treated with graftless four-quadrant cricoid division LTP in our academic, tertiary referral center, King Abdulaziz University Hospital in Jeddah, between 2006 and 2013.

Parameters such as age, gender, comorbid conditions, and grade of stenosis were recorded. Diagnosis

of subglottic stenosis was confirmed with direct laryngobronchoscopy under general anesthesia. The stenosis was graded according to the Myer-Cotton Classification of Subglottic Stenosis [6]. Patients who underwent previous airway procedures in other hospitals, either endoscopically with laser treatment and balloon dilation or via an open LTP procedure, were included.

Results:

During the 8-year period analyzed, a total of 20 patients 13 [65%] males and 7 [35%] females) ranging in age from 6 months to 48 years (mean age: 17 ± 14.5 years) underwent graftless four-quadrant cricoid division LTP. Twelve patients (60%) had comorbid diseases: 20% had cardiovascular disease, 25% had respiratory disease, 5% had genitourinary disease, and 10% had neurological comorbidities.

The Cotton classification system was used to classify the patients' grade of stenosis. During the study period, none of the patients treated had grade I, one had grade II, 12 had grade III and seven had grade IV subglottic stenosis. The stenosis was caused by post-intubation injury in 65% of the patients, trauma in 15%, congenital stenosis in 10%, and infection in 5%.

Twelve patients had undergone previous surgery to dilate the airway. These surgeries included laser treatment (N=9), both laser and balloon dilation (N=2), and LTP in another facility (N=1), and 85% of the patients included in the study had a history of tracheostomy.

Twenty patients underwent four-quadrant cricoid division LTP without grafting but with Montgomery T-tube stent insertion. Two patients had a successful outcome, defined as not needing any further surgeries, 16 patients required additional intervention, and 2 patients were lost to follow up.

The duration of stenting ranged from 2 to 455 days, with a mean of 127 ± 144 days. Mitomycin was used in 30% of the cases, for a mean duration of 2.83 ± 2.31 min (range: 3-5 min). Of the patients who underwent surgery, 15% experienced a surgical complication (5% pneumonia and 10% acute airway obstruction).

After the surgery, the majority of patients needed further surgical intervention. The details of the additional surgical procedures needed are presented in Table I.Decannulation could not be performed for two patients. Thus, decannulation was achieved in 16 of the 18 patients (88.88%).

Discussion:

LTP is considered the treatment of choice for advanced cases of laryngotracheal stenosis [1]. One of the techniques available is four-quadrant cricoid division LTP, which can be performed with or without the use of autologous cartilage grafts. Divisions of the anterior, posterior, and both lateral walls of the cricoid cartilage grants improved airway lumen enlargement [7].

Table I: Type and number of further interventions performed for each patient following graftless four-quadrant cricoid division laryngotracheal reconstruction.

Patient No.	Age (Years)	Balloon	Laser	Revision LTP	Permanent Tracheostomy
1	8 months	0	2	0	NO
2	10	1	0	0	NO
3	13	3	5	0	NO
4	23	0	0	2	YES
5	23	0	2	1	NO
6	3	1	0	0	NO
7	3	0	1	0	YES
8	30	4	4	2	NO
9	30	7	3	0	NO
10	32	1	1	1	NO
11	32	2	1	0	NO
12	39	0	2	0	NO
13	6	0	1	1	NO
14	6	0	1	1	NO
15	8	3	1	0	NO
16	9	6	16	3	NO

We sought to assess the efficacy of graftless four-quadrant cricoid division LTP. A successful outcome was defined as successful decannulation, no residual stenosis, and no need for further surgical intervention. In the current study, two patients experienced a successful outcome; while 16 required further intervention such as endoscopic balloon dilation, laser treatment, or revision LTP. Of these patients, two required a permanent

tracheostomy. This might be due to the recurrence of laryngotracheal stenosis after stent removal in the absence of sufficient skeletal support necessary to keep the airway patent. Moreover, in the current study, the majority of patients suffered from grade 3 or 4 subglottic stenosis. These are advanced cases wherein graft placement and cartilage augmentation may be imperative.

A previous report by Cotton et al (1992) discusses the indications, technique, results, and potential complications of four-quadrant LTP [7].

Comparing our results to the literature, Cotton et al [7] had a decannulation rate of 62%, with 14% of patients decannulated after revision LTP and the remaining 24% requiring a permanent tracheostomy.

Other LTP techniques, as described by the most experienced surgeons, have demonstrated successful decannulation rates, in relation to the grade of stenosis involved, ranging from 85% to 96% [5]. However, the need for further intervention after the procedure was not discussed. Serial direct laryngobronchoscopies of our patients showed granulation tissue and an inadequate airway lumen, requiring balloon dilation, endoscopic excision of the granulation tissue with a laser, or both. Eventually, 35% of the study patients needed revision LTP.

Conclusion:

The findings of the current study demonstrate that graftless four-quadrant cricoid division LTP often requires further surgical intervention to resolve the stenosis.In the case of severe stenosis, graft placement and cartilage augmentation may be imperative.

References

1. Lorenz RR.Adult laryngotracheal stenosis: etiology and surgical management. **Curr Opin Otolaryngol Head Neck Surg**. 2003; 11:467-472.
2. Cotton RT, Myer CM 3rd, O'Connor DM. Innovations in pediatric laryngotracheal reconstruction. **J PediatrSurg**. 1992; 27:196-200.
3. Boardman SJ, Albert DM. Single-stage and multistage pediatric laryngotracheal reconstruction. **Otolaryngol Clin North Am**. 2008;41:947-958.
4. Hseu AF, Benninger MS, Haffey TM, Lorenz R. Subglottic stenosis: a ten-year review of treatment outcomes. **Laryngoscope**. 2014; 124:736-741.
5. Bielecki I, Cofała M. Single-stage laryngotracheoplasty in children. **Auris Nasus Larynx**. 2011; 38:697-701.
6. Myer CM 3rd, O'Connor DM, Robin T. Cotton RT. Proposed grading system for subglottic stenosis based on endotracheal tube sizes. **Ann Otol Rhinol Laryngol**. 1994; 103:319-323.
7. Cotton RT, Mortelliti AJ, Myer CM 3rd. Four-quadrant cricoid cartilage division in laryngotracheal reconstruction. **Arch Otolaryngol Head Neck Surg**. 1992; 118:1023-1027.

The measurement of experienced self-perceived burnout among residents of Saudi board of otolaryngology-head and neck surgery: A cross-sectional study

Abstract

Objectives: The aim of this study was to determine the self-perceived burnout among residents of Saudi board of otolaryngology-head and neck surgery. In addition, to identify the potential stressors that can be modified to minimize burnout.

Method: The survey instrument in the form of the self-administered close-ended questionnaire was distributed to all otolaryngology residents between second year through fifth-year training. All residents were registered with the Saudi board of otolaryngology–head and neck surgery in the academic year 2013. The survey included all four settings of training in Kingdom of Saudi Arabia (Central, Western, Eastern and Southern). The main variables included the Maslach Burnout Inventory–Human Services Study (MBI-HSS) and demographic information.

Results: The response rate was 67% (72/108). All the returned questionnaires were fromcurrent second- through fifth-year otolaryngology residents. Burnout was strikingly prevalent in our study, with 70% of residents expressed either high (45%) or moderate (25%) level of emotional exhaustion. This was highly associated with high levels (60%) of depersonalization and low levels (45%) of personal accomplishment. Burnout was almost equivalent across residents in all years of residency with no significant difference between males and females.

Conclusions: The results of this study agree with cited evidence that burnout is likely to be more prevalent among residents. Modification of risk factors, such as confrontations with others and allowing sufficient faculty time for learning and research, should be undertaken to limit the development of burnout and its deleterious sequelae.

Key words: Otolaryngology, Residents, Professional Burnout.

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Introduction

The Residency training program of otolaryngology-head and neck surgery under Saudi Commission for Health Specialties (SCFHS) was established to train and graduate competent and skilled otolaryngology – head and neck surgeons who will "function as independent surgeons, enabling them to successfully pursue careers in general otolaryngology or to proceed with subspecialty fellowship training" [1]. Currently, the Saudi board of residency training program is running in four centers (Central, Western, Eastern and Southern region). In each region, the residents rotate through many hospitals to gain experience in different aspects of clinical exposure and surgical skills. The program constitutes five years of training. In the first year, residents rotate through different subspecialties under general surgery. The remaining four years are devoted to further advancement in training to encompass the wide range of clinical and operative aspects of otolaryngology-head and neck [1]. Residents are exposed to varieties of cases in neuro-otology, rhinology, laryngology, facial plastic surgery, pediatric airway, head and neck surgical oncology and reconstructive surgery. Residency is a stressful training period during which residents handle their responsibility towards patients' care simultaneously while gaining knowledge and surgical experience [2]. Residents during their training learn parallel to medical and surgical skills other important skills as communication skills, adult learning principles, and professionalism.

Burnout is a critical side effect of residents' work which may affect the resident's satisfaction and the quality of patient care [3, 4]. It is a result of a prolonged response to chronic exposure of emotional and interpersonal stressors. It is a phenomenon that reflects the complex interaction between environmental stressors, genetic vulnerabilities and coping styles [5, 6].

There are various definitions proposed by researchers for explaining burnout.

Freudenberger defined burnout as a "physical, emotional and mental exhaustion as well as an absence of job involvement, dehumanization and decreased sense of accomplishment" [7]. Figley described burnout as a process rather than as a fixed condition which begins gradually and eventually advances in intensity over time [8].

There are three aspects of burnout:

1. Emotional exhaustion which is the feeling of being emotionally overextended and fatigued by resident's work and can be considered the cornerstone of resident's burnout.

2. Depersonalization which is the adoption of a callous or dehumanized perception of others.
3. Diminished personal accomplishment which is the feeling of dissatisfaction with work-related achievements and can lead to a negative self-assessment. Based on the three dimensions burnout is defined as a high degree of emotional exhaustion, a high degree of depersonalization, and a low sense of persona accomplishment [9].

A variety of stressors have been associated with self-perceived burnout and low satisfaction including work overload, working condition and work role ambiguity, home-work interface problems, anxiety about the future, confrontations with others, performance pressure, lack of support from supervisors and colleagues, and conflict with demands [10, 11].

Surgical residents are more negatively impacted by physical exhaustion and conflicts between professional and personal life [12]. In fact, studies demonstrate that up to 76% of residents meet criteria for burnout and have expressed career dissatisfaction. These data are alarming and sound a clear bell for effective interventionsto prevent burnout and promote wellness among residents-in-training [13].

The aims of this study were to report the prevalence of burnout among residents of Saudi otolaryngology-head and neck surgery. In addition, the present study aimed at delineating the relationship of burnout scores with resident's demographic characteristics. Furthermore, to identify the potential stressors that can be modified to minimize burnout and improve the quality of residency education.

Materials and Methods:

Study design and participants

The study was a cross-section study of multi center hospitals in Saudi Arabia conducted between November 2012 and January 2013. The investigation was a close-ended questionnaire-based study of all Saudi board otolaryngology-head and neck surgery residents registered with the Saudi Commission for Health Specialties (SCFHS) in the academic year 2013 in the different locations of training programs. First-year postgraduate residents were excluded. A representative (in the title of a chief resident) in each location of the training program was available to facilitate the residents' response to questionnaires. In this way, we offered participation to every otolaryngology resident in all accredited Saudi board training programs. They were enrolled from various residency-training programs in Saudi Arabia, including Central, Western, Eastern, and Southern region. We included returned questionnaires for analysis if they were from current second year through fifth-year otolaryngology residents. Confidentiality was maintained through anonymous responses and voluntary participation.

Questionnaire administration:

We distributed questionnaires by different ways to improve the response rate including:

- Soft copies through serial e-mails with 2 weeks gap period in between.
- Hard copies by postal mailings to maximize participation.
- A representative (a chief resident) in each setting of the training program wasavailable to facilitate the process of questionnaires' distribution and data collection.

Questionnaire content:

The distributed survey was in the English version and contained five pages. The first page was the final approval letter from the King Abdullah International Medical Research Center (KAIMRC). The second and third pages were the participant cover letter and informed consent which clarified the study purpose, confidentiality of research records, potential benefits and risks, voluntariness and withdrawal from the study. The fourth and fifth pages were the self-perceived burnout questionnaire.

1. Demographics. Residents need to fill first gender, the setting of training, the level of training, marital status, the total number of children and number of children less than five years.
2. Maslach Burnout Inventory–Human Services Study (MBI-HSS). The most established and widely used measure of burnout among physicians [14, 15]. Twenty-two questions addressed the three burnout components:
   a. Emotional Exhaustion (EE; nine items).
   b. PersonalAccomplishment (PA; eight items).
   c. Depersonalization (DP; five items).

Burnout was assessed using statements such as, "I feel emotionally drained from my work" (EE), "I feel like I treat some of my patients as if they were impersonal objects," (DP), or "I have accomplished many worthwhile things in this training program" (PA). Residents rated the frequency of encountering these situations on a seven-point Likert scale from "never" (0) to "every day" [6, 7]. Each of the three components then yielded a subscore, which was stratified into low, moderate, or high levels of burnout based on published cutoffs (low EE 0-18, moderate 19-26 and high EE 27+; low DP 0-5, moderate DP 6-9 and high DP10+ while low PA 40+, moderate PA 34-39 and high PA 0-33) [16, 17]. A high burnout score required a high score on all three subscales. Conversely, a low burnout score required a low score on all three subscales. All other scores were considered moderate [18]. Several studies support internal reliability and validity of the Maslach Burnout Inventory Surveys [19, 20, 21]. The reliability coefficients for the subscales range between 0.70 and 0.89 which is almost similar in the Western and Non-Western setting. Different sets of correlations provided substantial evidence for the validity of the MBI.

Studied Variables:

Dependent (Outcome) Variables:

Burnout components (emotional exhaustion, depersonalization and lack of personal accomplishment).

Independent Variables:

1. Relevant demographic factors (gender and the setting of training).
2. Life Factors: Relationship status stability (single, married, or divorced) and number of children (total and less than 5 years).
3. Level of training which stratified as junior postgraduate years (PGY-2) and (PGY-3) or senior (PGY-4 and PGY-5).

Statistical analysis

Descriptive Statistics:

We performed statistical analysis using SPSS Statistics 17.0 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics are presented as frequencies and percentages for the categorical variables (e.g. gender, level of the training (postgraduate year), and the training location). Numerical variables are presented as mean + standard deviation. A 95 % confidence interval was determined for the score of self-perceived burnout.

Inferential Statistics:

In our statistical analysis, we (1) used Chi-square tests for associations between discrete categorical variables to evaluate the differences between burnout level with gender (male vs. female), the level of training, the setting of training and marital status, (2) used correlation coefficient to compare the effect of variables, and (3) considered comparisons and associations to be statistically significant if P-values less than 0.05.

Results

Demographics and Response Rate

Out of 108 distributed questionnaires, 72 were returned completed (67% responserate). All of returned questionnaires were from current second year through fifth year residents. A total of 48 out of 72 residents were males (67%) and the remaining (33%) were females. Distribution across training years was even. (Table II) demonstrates the demographic characteristics of residents.

Table I. Distribution of otolaryngology residents among four regions

Residency Level	Central Region	Western Region	Eastern Region	Southern Region	Total
R 1	12 (2 F) (10 M)	10 (8 M) (2 F)	6 (4 F) (2 M)	2 (2 M)	30 (22 M) (8 F)
R 2	12 (4 F) (8 M)	4 (4 M)	7 (2 F) (5 M)	4 (4 M)	27 (21 M) (6 F)
R 3	12 (5 F) (7 M)	9 (2 F) (7 M)	6 (2 F) (4 M)	3 (3 M)	30 (21 M) (9 F)
R 4	7 (3 F) (4 M)	13 (6 F) (7 M)	6 (3 F) (3 M)	1 (1 M)	27 (15 M) (12 F)
R 5	6 (6 M)	9 (3 F) (6 M)	6 (3 F) (3 M)	3 (3 M)	24 (18 M) (6 F)
Total	49 (14 F) (35 M)	45 (13 F) (32 M)	31 (14 F) (17 M)	13 (13 M)	138 (41 F) (97 M)

(M=male, F=female)

Resident's burnout

In our study, we obtained a Cronbach's alpha 0.89 for emotional exhaustion scale, 0.79 for personal accomplishment and 0.87 for depersonalization scale and 0.84 for all three subscales. On the basis of these subscales, high burnout (emotional exhaustion) was seen in 45% of residents and moderate burnout in 25%. In addition, 45% of residents expressed a low level of personal accomplishment and 49% expressed a high level of depersonalization. Percentages of residents stratified intolow, moderate, and high levels bysubscale appear in (Figures1-3). There was a strong association of self-perceived burnout with marital status. A total of 28 (55%) of married residents expressed a high level of burnout (emotional exhaustion) compared with four (20%) of single residents with a significant p-value of 0.02. There was no significant association of resident's burnout with other demographic data including gender, the level of training and the setting of training. (Tables III) demonstrate the association of burnout with other demographic characteristics. In consideration of the strong association between burnout (emotional exhaustion) and marital status we evaluated the correlation between emotional exhaustion and 'children number in total' and 'less than five years'. There was a significant positive correlation between emotional exhaustion and children number, rho =0.25 and 0.23, N = 51, p = 0.04 and 0.05 respectively. There was a moderate positive correlation between emotional exhaustion and depersonalization r (72)= 0.52.

Stressors

At the end of the questionnaire, there was an open-ended question about the frequent causes that induce stress and burnout in the training program. The frequent stressors mentioned by residents were excessive call and work duties, frustrating interactions with nurses, colleagues and consultants, insufficient faculty teaching time, decrease opportunity to do some of surgical procedures, unfair distributions of tasks between residents in some

Table II. Residents' demographic characteristics

Variable	N	%
Gender		
Male	48	67%
Female	24	33%
Setting		
Central	30	42%
Western	23	32%
Eastern	14	19%
Southern	5	7%
Training Level		
R2	12	17%
R3	23	32%
R4	19	26%
R5	18	25%
Marital Status		
Single	20	28%
Married	51	71%
Divorced	1	1%
Children (total)		
0	16	32%
1	10	20%
2	18	36%
3	6	12%
Children less than 5 years		
0	16	33%
1	12	24%
2	20	41%
3	1	2%

Table III. Association between emotional exhaustion and demographic characteristics

		Emotional Exhaustion						
		Low (0-18)		Moderate (19-26)		High 27+		p-value
		N	%	N	%	N	%	
Gender	Male	13	27%	12	25%	23	48%	0.88
	Female	6	33%	4	22%	8	45%	
Training level	Junior (R2-R3)	9	27%	9	27%	16	46%	0.82
	Senior (R4-R5)	12	33%	9	25%	15	42%	
Setting of training	Central	12	40%	5	17%	13	43%	0.39
	Western	4	18%	8	36%	10	46%	
	Eastern/Southern	5	26%	5	26%	9	48%	
Marital status	Single	10	50%	6	30%	4	20%	0.02
	Married	11	22%	12	23%	28	55%	

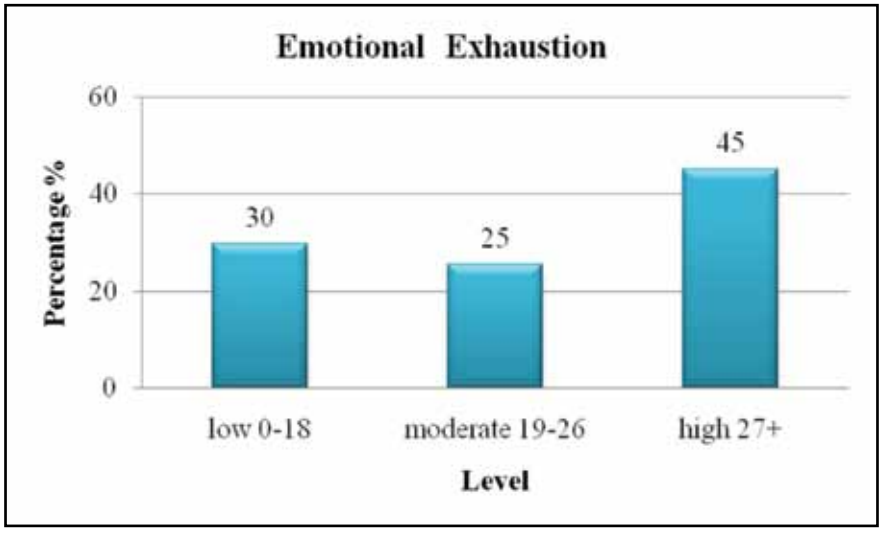

Figure 1: Percentage of burnout (Emotional Exhaustion) among otolaryngology residents

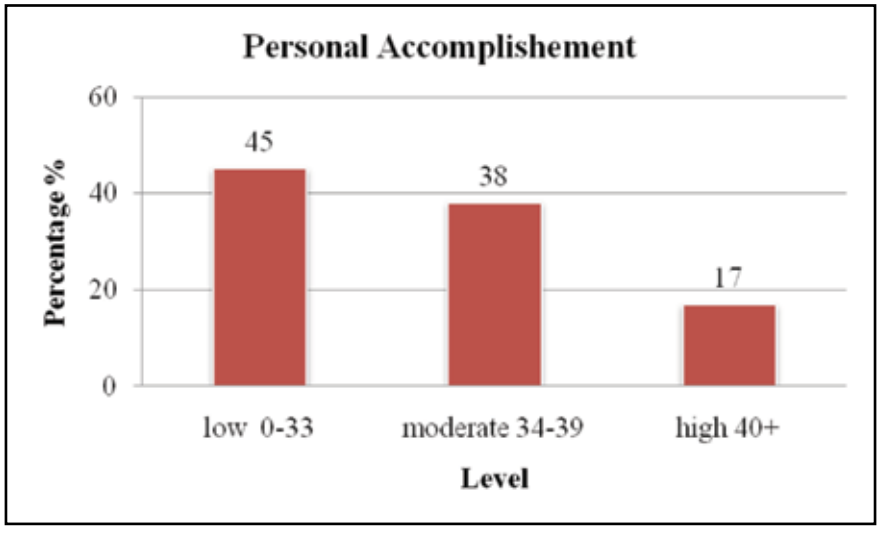

Figure 2: % of burnout (Personal Accomplishment) among otolaryngology residents

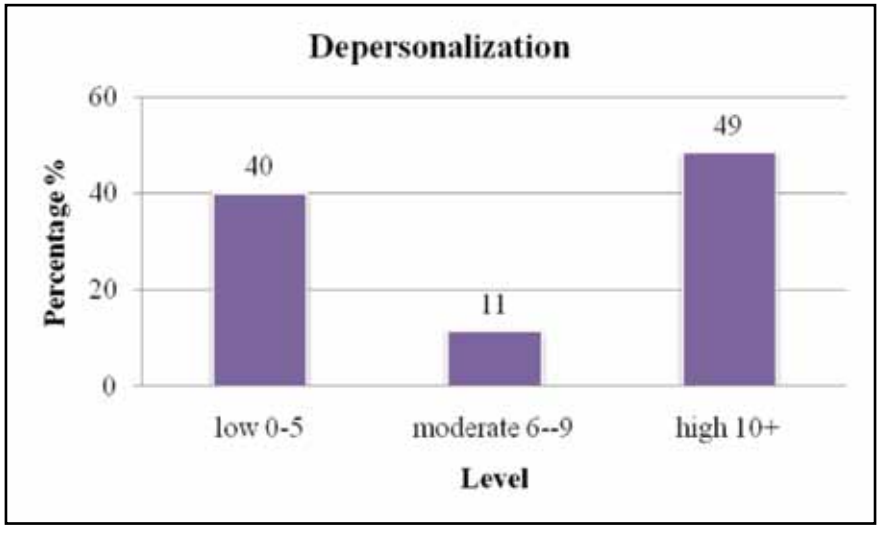

Figure 3: % of burnout (Depersonalization) among otolaryngologyresidents

centers, lack of sleep, lack of a private resident office, unclear hospital policies and resident's rules in some hospitals, lack of independence, travelling to do training in other regions in kingdom, increases number of residents, and insufficient extracurricular time.

Discussion

Burnout during residency training has gained significant attention secondary to concerns regarding job performance and patient care. Residency is a critical period of medical practice and professional development. For many reasons the field of otolaryngology – head and neck surgery is an excellent study model for resident burnout. First, because of its relatively small size which allows for surveying all residents. Second, because of average levels of burnout reported among practicing physicians. In addition of its dual medical/surgical nature which make it more representative of medicine as a whole than any single exclusively medical or surgical field [22, 23, 24]. This study evaluated different settings of national training programs. Surveying residents across the kingdom is crucial because differences between individual programs could produce a critical sampling bias. The results of this study agree with cited evidence that, among residents, burnout is likely more prevalent. Burnout was strikingly prevalent in our study, with 70% of residents expressed high (45%) and moderate (25%) level of emotional exhaustion. This was highly associated with high levels (60%) of depersonalization. In addition, 45% demonstrated low levels of personal accomplishment. A 2007 study by Golub et al on U.S. residents of otolaryngology–head and neck surgery. U.S residents expressed a high level of emotional exhaustion and depersonalization. While near majority of U.S residents were in the high level of personal accomplishment [13]. In our data, burnout was almost equivalent across residents in all years of residency with no difference between males and females. Effect of gender and level of training on self-perceived burnout varied among literature. A study by Thien-Tuong Vi Vu et al 2010 evaluated residents' satisfaction with Canadian otolaryngology-head and neck surgery programs. The prevalence of self-perceived burnout in the study was 33%. No difference in both overall and item score was identified between sexes [25].

One national study done by Rahemi J. et al 2006 was to investigate resident burnout among different medical specialties. The study covered 71 residents from eight different medical specialties working at KAMC. All residents were from Saudi board training programs. There was no significant difference between junior and senior residents regarding the three mean values of the subscales of MBI which was the same result seen in our study. Obstetrics, Gynecology, and Surgical residents expressed high levels of burnout Symptoms [26]. In contrast to Garza JA et al 2004 study where female residents in obstetrics–gynecology and internal medicine experienced a significant elevation in emotional exhaustion compared with male residents [27]. In a systematic review, IsHak et al reviewed the fifty-one studies on burnout from 1974 to 2009. Review of literature revealed that burnout is prevalent in medical students (28%-45%) and residents (27%-75%) depending on specialty and practicing physicians [5]. Accumulated stress during medical school can lead to burnout during residency training. A 2006 study by Rosen et al showed that by the end of the first year, the burnout rates had increased to 55.3%, with a significant increase in both the depersonalization and emotional exhaustion subscales [28]. Another study of internal medicine residents at the University of Washington found that 76% met criteria for burnout as measured by the MBI regardless of postgraduate year [29]. Martini et al 2004 study compared burnout rates among the different specialties using the MBI. The overall burnout rate was 50% and ranged from 27% to75% among different specialties. Burnout rate was the highest 75% in obstetrics-gynecology and the lowest 27% in family medicine. Surgical specialties ranged between 40-60% [30]. In a 2011 study of 115 otolaryngologists who were alumni of the University of Iowa hospitals and clinics and who worked in private practice or academic medicine, researchers found that those who were at an earlier point in their careers, worked longer hours, had more children and were newly married were more likely to report feeling burned out [31].

Current data on interventions for physician burnout are insufficient to recommend particular measures. Interventions to address burnout fall into two categories: workplace-driven interventions and individual driven behavioral, social, and physical activities. Potential interventions include workplace-driven and individual-driven measures to minimize and prevent burnout. Workplace interventions include awareness and education about burnout, workload modifications, stress management training, mentoring, emotional intelligence training, and wellness workshops. Individual-driven measures include behavioral, social, and physical activities as promoting interpersonal professional relations, meditation, counseling, and exercise [5].

Conclusion

Burnout is a well-known phenomenon that must be addressed by leadership in residency training programs. The residents studied experienced significant levels of burnout in all three components.Significant low personal accomplishment can affect residents' professional development and negatively impact their career satisfaction. The disturbingly high prevalence of burnout should serve as a wake-up call to residency program directors to help and support residents during the training program.

Limitations and Recommendations

Unequal residents' distribution among four settings of training maycompromise some of statistical comparison data.The response rate was considerably low and thepossibility of response biases cannot be excluded. Further studies should be done to address professional stressors during training.

References

1. Saudi Council for Health Specialties. Saudi Board in Otolaryngology-Head and Neck Surgery. Program Curriculum and Manual 2014 [Online]. Available from www.scfhs.org.sa/MESPS/TrainingProgs/TrainingProgsStatement/Nose Ear Surg/Pages/Prog Book.aspx A pdf file [Accessed 17th October 2015].
2. Msaouel P, Keramaris NC, Tasoulis A, Kolokythas D, Syrmos N, Pararas N, et al. Burnout and training satisfaction of medical residents in Greece: Will the European Work Time Directive makes a difference? **Hum Resour Health.** 2010 Jul 1; 8(1):16.
3. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. **Ann Intern Med**. 2002 Mar; 136(5):358–67.
4. Spickard A Jr, Gabbe SG, Christensen JF. Mid-career burnout in generalist and specialist physicians. **JAMA**. 2002;288:1447-1450.
5. Ishak WW, Lederer S, Mandili C, Nikravesh R, Seligman L, Vasa M, et al. Burnout during residency training: A Literature review. **J Grad Med Educ**. 2009 Dec; 1(2): 236–42.
6. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. **Ann Intern Med**. 2002;136:358–367.
7. Freudenberger HJ. The staff burnout syndrome in alternative situations. **Psychotherapy: Theory, Research and Practice**. 1975; 12:73-82.
8. Figley CR. Compassion fatigue: coping with secondary traumatic stress disorder in those who treatthe traumatized. New York: **Brunnar & Mazel**. 1995.
9. Maslach C, Schaufeli WB, Leiter MP. Job burnout. **Annu Rev Psychol**. 2001;52:397–422.
10. Zapf D, Seifert C, Schmutte B, Mertini H, Holz M. Emotion work and job stressors and their effects on burnout. **Psychol Health**. 2001 Sep; 16(5):527-45.
11. Ahsan N, Abdullah Z, Fie DYG, Alam SS. A Study of Job Stress on Job Satisfaction among University Staff in Malaysia: Empirical Study. **Eur J of Soc Sci**. 2009; 8(1):121-31.
12. Lepnurm R, Dobson R, Backman A, Keegan D. Factors explaining careersatisfaction among psychiatrists and surgeons in Canada. **Can J Psychiatry**. 2006; 51(4):243–55.
13. Golub JS, Weiss PS, Ramesh AK, Ossoff RH, Johns MM 3rd. Burnout in residents of otolaryngology-head and neck surgery: a national inquiry into the health of residency training. **Acad Med**. 2007 Jun; 82(6):596–601.
14. Thomas NK. Resident burnout. **JAMA** 2004 Dec; 292(23):2880-9.
15. Maslach C, Jackson S. The measurement of experienced burnout. **J Occup Behav**. 1981a;2: 99-103.
16. Maslach C, Jackson SE, Leiter MP. The Maslach Burnout Inventory manual (3rd ed.). Palo Alto, CA: **Consulting Psychologists Press**. 1996.
17. Elliott RL, Yudkowsky R, Vogel RL. Quality in psychiatric training: development of a resident satisfaction questionnaire. **Acad Psych**. 2000; 24: 41-6.
18. Mossialos E, Allin S, Davaki K. Analysing the Greek health system: a tale offragmentation and inertia. **Health Econ.** 2005 Sep; 14(1):151-68.
19. Raimundo A, Cristina V, Emilia IF, Luis ML. A meta-analytic reliability generalization study of the Maslach Burnout Inventory. **Intl J Clin Health Psychol**. 2011; 11:343-36.
20. Abu-Hilal M. Dimensionality of burnout: Testing for invariance across Jordanian and Emirati teachers. Psychol Rep.1995 Dec; 77(3 Pt 2):1367-75.
21. Christina M, Susan EJ. The measurement of experienced burnout. **J Occup Behav**. 1981; 99-113.
22. Lemkau J, Rafferty J, Gordon R Jr. Burnout and career-choice regret among family practice physicians in early practice. **Fam Pract Res J**. 1994;14:213–22.
23. Gabbe SG, Melville J, Mandel L, Walker E. Burnout in chairs of obstetrics and gynecology: diagnosis, treatment, and prevention. **Am J Obstet Gynecol**. 2002;186:601–12.
24. Lloyd S, Streiner D, Shannon S. Burnout, depression, life and job satisfaction among Canadian emergency physicians. **J Emerg Med**. 1994;12:559–565.
25. Thien-Tuong-Vi Vu, Nguyen. Residents' satisfaction with Canadian otolaryngology-head and neck surgery programs. **J Otolaryngol Head Neck Surg**. 2010;39(2):207-13.
26. Rahemi J, Saadani M, Kinsara A. Burnout Syndrome among Saudi Medical Residents: A Controlled Study. **Curr Psychiatry.** 2006 March ;13(1).
27. Garza JA, Schneider KM, Promecene P, Monga M. Burnout in residency: a statewide study. **South Med J**. 2004;97:1171–73.
28. Rosen IM, Gimotty PA, Shea JA, et al. Evolution of sleep quantity, sleep deprivation, mood disturbances, empathy and burnout among interns. **Acad Med**. 2006;81(1):82–85.
29. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. **Ann Intern Med**. 2002;136:358–67.
30. Martini S, Arfken CL, Churchill A, Balon R. Burnout comparison among residents in different medical specialties. **Acad Psych**. 2004; 28(3):240–42.
31. Fletcher AM, Pagedar N, Smith RJ. Factors Correlating with Burnout in Practicing Otolaryngologists. **Otolaryngol-Head Neck Surg**. 2012 Feb;146: 234-9.

Appendix I

Participant Informed Consent

Dear Respondent

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It also describes your right to withdraw from the study at any time.

Purpose of study:

The main aim from this national cross-sectional study is to determine the prevalence and causes of residents' self-perceived burnout. A representative will be available in each setting who can help you to answer any questions regarding the study. The questionnaire will take approximately 20 minutes.

Confidentiality of Research Records:

- Anonymous close-ended questionnaire.
- Only the researcher has access to contact information and responses.

Potential Risks and Discomforts:

- No physical, social or economic risks are posed to participants.
- Participating in the study will not affect your current legal status, services provided or status in the program.
- The information that participants provide will remain confidential.

Potential Benefits:

By participating in this study, you will get an opportunity to provide information about positive and negative aspects of otolaryngology Saudi board training program and potentially improve the quality of the program in the future.

Voluntariness & Withdrawal from Study:

Your participation in this study is strictly voluntary and will not affect your current legal situation or result in adverse reactions from the training program. If you choose to withdraw from the study, you may end the participation at any time. I have read the material above, and any questions I asked have been answered to my satisfaction. I realize that I may withdraw without prejudice at any time.

Respondent's level of training Date Setting of Training

Appendix II

Resident Burnout Questionnaire based on MBI (Maslach Burnout Inventory)

How often do the following statements describe the way you feel about working as a resident in the Saudi Board of Otolaryngology-Head & Neck Surgery?

Item	Every day (6)	A few times a week (5)	Weekly (4)	A few times a month (3)	Monthly (4)	A few times a year (1)	Never (0)
Emotional Exhaustion							
I feel emotionally drained from my work.							
I feel used up at the end of the workday.							
I feel fatigued when I get up in the morning and have to face another day on the training.							
Working with people (staff) all day is really a strain for me.							
I feel burnout from my work.							
I feel frustrated by my job (training program).							
I feel I'm working too hard on my job.							
Working with people (staff) directly puts too much stress on me.							
I feel like I'm at the end of my rope.							

Appendix III

Personal Accomplishment							
I can easily understand how my recipients (colleagues) feel about things.							
I deal very effectively with the problems of my recipients (colleagues and patients).							
I feel, I'm positively influencing other people's lives through my work.							
I feel very energetic.							
I can easily create a relaxed atmosphere with my recipients (colleagues).							
I feel exhilarated after working closely with my recipients (colleagues).							
I have accomplished many worthwhile things in this job.							
In my work, I deal with emotional problems very calmly.							
Depersonalization							
I feel I treat some patients as if they were impersonal 'objects'.							
I've become more callous toward people since I took this (training program).							
I worry that this training program is hardening me emotionally.							
I don't really care what happens to some patients.							
I feel staff and my colleagues blame me for some of their problems.							

Common five causes induce stress and burnout in the training program:

1.

2.

3.

4.

5.

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Clinical Cases

Saudi Journal of Oto-Rhino-Laryngology Head and Neck Surgery Volume 18 No. 1, Jan. 2016

Bilateral Vocal Fold Paralysis due to Endotracheal Cuff Compression, Case report and Review Article

Abstract
Bilateral vocal fold paralysis after thyroidectomy is a devastating complication. Visually intact trunk of the recurrent laryngeal nerve (RLN) does not mean physiologically functioning nerve. We present a case and elucidate possible mechanisms of bilateral vocal cord palsy after thyroidectomy in visually intact recurrent laryngeal nerve.
Keywords: Recurrent laryngeal nerve, vocal fold palsy, thyroidectomy complication, endotracheal intubation, neuropraxia.

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Introduction

Recurrent laryngeal nerve injury is a known serious complication of thyroidectomy that lead to dysphonia, weak cough, stridor and life-threatening respiratory distress. The incidence of vocal folds palsy varies widely, ranging from 1.4-38.4% (mean of 9.8%) for temporary paresis and up to 18.6% (mean of 2.3%) in permanent paralysis [1]. Incidence of bilateral recurrent laryngeal palsy after thyroidectomy estimated to be less than 0.5% [2]. This can result from direct nerve injury by unintentional transection, ligation, traction, or compression by endotracheal tube, which results in neuropraxia, axonotmesis or neurotmesis [3]. Majority of cases of bilateral vocal fold paralysis where RLN is visually intact during operation are temporary and resolve quickly over weeks or months. This suggests that the underlying pathophysiology is neuropraxia [4,5]. We present a case and discuss the most accepted mechanisms of bilateral RLN injury. Review of the literature will also be presented

Case Presentation

A fifty seven years old female known case of Diabetes Mellitus type 2 and dyslipidemia presented to the general surgery department with a history of swelling of right thyroid lobe for 18 months with no history of change of voice, dysphagia or chocking attacks. No history of hypothyrodism or hyperthyroidism. Fine needle aspiration showed atypia of undetermined significance. Pre-operative fiberoptic laryngoscopy revealed bilateral freely mobile vocal folds. Patient underwent total thyroidectomy with preservation of recurrent laryngeal nerve bilaterally. Following operation patient started to develop inspiratory stridor with oxygen saturation of 98% on room air n the recovery room. Neck examination was nbormal.The impression at that time was laryngeal edema secondary to intubation. Intravenous steroid was started. After few hours there was minimal improvement and stridor persisted. Otorhinolaryngolgy consultation was done and patient reviewed. Flexible rhinopharyng laryngoscopy was performed which showed bilateral immobile vocal fold with glottic chink of 3 mm. The patient was managed conservatively in the intensive care unit. There was no need for intubation or tracheostomy. Four days post-operatively twitchs started to appear on right vocal fold with complete recovery of vocal folds mobility after 10 weeks.

Discussion

One of the essential goals of thyroidectomy is identification and preservation of recurrent laryngeal nerve. In order to achieve this, the surgeon should be aware of detailed surgical anatomy, anatomical variants and neurophysiology of the recurrent laryngeal nerve and different mechanisms that lead to this complication. Despite careful handling in such procedures, the incidence of postoperative vocal cord palsy can reach up to 4% in visually intact nerve [5]. In this report, we elucidate possible mechanisms of bilateral vocal cord palsy after thyroidectomy in visually intact recurrent laryngeal nerve.

Bilateral vocal fold immobility secondary to endotracheal intubation is a known but rare complication which can be either permanent immobility secondary to mechanical injury by dislocation of arytenoid or temporary paresis due to direct injury to the nerve. These entities can be differentiated from each other by laryngeal electromyography.Most investigators estimated the incidence of post intubation vocal folds immobility between 10-15%, but they did not differentiate vocal fold palsy from cricoarytenoid fixation [6]. Post intubation vocal fold palsy has been first reported in 1953 and since then it has been sporadically reported in cases not involving neck or RLN dissection.Kruse et al studied the anatomy of recurrent

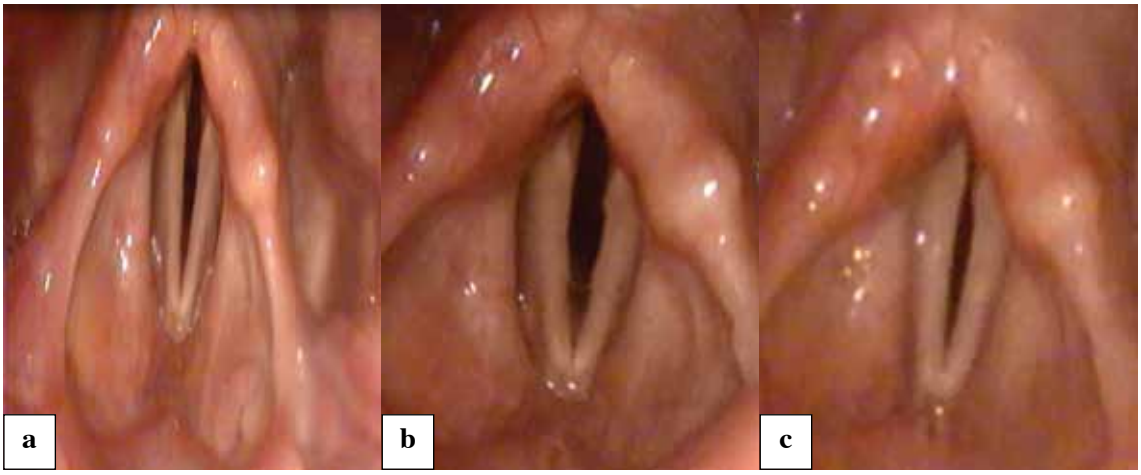

Figure 1: endoscopic view of bilateral paralyzed vocal fold with glottis chink of 3 mm. Figures b & c: endoscopic view after 2 weeks of bilateral mobile vocal fold during abduction and adduction.

laryngeal nerve in human cadavers and accordingly he described RLN branching as follows: first most distal branch is Ansa Galeni which anastomosed with the internal branch of superior laryngeal nerve followed by a second thin branch that supplies theposterior cricoarytenoid muscle. After that the RLN bifurcates into posterior branch that runs to the interarytenoid muscle and an anterior branch that supplies the thyroarytenoid and lateral cricoarytenoid muscles [7]. Different positions of paralyzed vocal folds can be attributed to variations in RLN branching (Wagner-Grossmann theory). Mechanism of vocal fold palsy, apart from cricoarytenoid fixation, can be explained by position and pressure of the cuff of the endotracheal tube. Patient positioning during thyroidectomy and neck extension may result in pulling of the endotracheal tube and rising the cuff in the subglottic area, where the anterior branch passes medial to the lamina of thyroid cartilage about 6-10 mm below vocal cord, which makes it vulnerable t compression between thyroid cartilage and the cuff of the endotracheal tube [8]. Highcuff pressure and position in the subglottic area will cause compression to vasavasorum, ischemia, and neuropraxia of the RLN without axonal disruption [9]. The risk of paralysis doubled with age more in above 50 years of age, prolonged intubation and in patients with hypertension or diabetes mellitusdue to diabetic neuropathy [9]. Surgeons should pay attention to such complication especially when using intraoperative monitoring (INOM) where the tube is high-riding just below vocal fold as reported by Misronet al [10].

The second possible cause of vocal fold palsy in visually intact nerve is stretching of RLN during manipulation of thyroid. Excessive stretching and tension will cause decreased blood flow with subsequent ischemia, edema and finally neuropraxia [4]. The risk of injury to the nerve increased if there is anatomical variations such as extralaryngeal bifurcation which occur near Berry's ligament about 5-20 mm from usual entry point to the larynx and gives small thin branches [11]. Incidence of extralaryngeal bifurcation range between 24.3%-43%, of which 9-30% occur bilaterally [12,12].The RLN divides into anterior and posterior remi. There is a debate about their sensory and motor supply. Some authors believe that anterior remi supplies the adductor muscles only and the posterior cricoarytenoid is innervated by the posterior rami [14], in contrast to other investigators whose suggested that the posterior branch is solely sensory and the anterior branch is solely motor [12,12]. Snyder et al found that the greatest risk of injury to the anterior branch of RLN is in the distal 2 cm of the extralaryngeal segment by using EMG becausemanipulation and anteromedial rotation of thyroid lobe will stretch the nerve and compress it against the fibrous ligament of Berry [4].

In our case attribute the cause of RLN palsy to the pressure injury caused by the endotracheal tube and not to the stretching of extralryngeal bifurcated RLN for the following reasons: first, prevalence of bilateral extrlaryngeal bifurcation of RLN is uncommon. Second, both vocal folds were symmetrically paralyzed, and theoretically it is not acceptable that traction and tension will be applied equally bilaterally during procedure.

Conclusion:

Bilateral vocal fold paralysis after thyroidectomy is a devastating complication. Visually intact trunk of the recurrent laryngeal nerve does not mean physiologically functioning nerve. RLN paralysis in such situation should carry the possibility of endotracheal cuff compression if both vocal folds are symmetrically affected. In the other hand, unequally immobile vocal fold should raise suspicion of traction injury to the nerve. RLN neuropraxia can be managed conservatively without tracheostomy, in stable patient, as it is a temporary situation.

References

1. Jeannon JP, Orabi AA, Bruch GA, Abdalsalam HA, Simo R. Diagnosis of recurrent laryngeal nerve palsy after thyroidectomy: a systematic review. **Int J ClinPract.** 2009; 63(4):624-9.
2. Bhattacharyya N, Fried MP. Assessment of the morbidity and complications of total thyroidectomy. **Arch Otolaryngol Head Neck Surg.** 2002;128:389–392.
3. Myssiorek D. Recurrent laryngeal nerve paralysis: anatomy and etiology. **Otolaryngol Clin North Am**. 2004;37(1):25-44, v.
4. Serpell JW, Lee JC, Yeung MJ, Grodski S, Johnson W, Bailey M. Differential recurrent laryngeal nerve palsy rates after thyroidectomy Surgery. 2014 Nov; 156(5):1157-66. doi: 10.1016/j.surg. 2014.07.018. Epub 2014 Oct 17.
5. Synder SK, Lairmore TC, Hendricks JC, Roberts JW. Elucidating mechanisms of recurrent laryngeal nerve injury during thyroidectomy and parathyroidectomy. **J Am Coll Surg.** 2008;206(1):123-30.
6. Benninger MS, Gillen JB, Altman JS.Changing etiology of vocal fold immobility. **Laryngoscope**. 1998;108(9):1346-50.
7. Kruse E, Olthoff A, Schiel R. Functional anatomy of the recurrent and superior laryngeal nerve. **Langenbecks Arch Surg.** 2006;391:4–8.
8. Cavo JW Jr. True vocal cord paralysis following intubation. **Laryngoscope**. 1985; 95(11):1352-9.
9. Kikura M, Suzuki K, Itagaki T, Takada T, Sato S. Age and comorbidity as risk factors for vocal cord paralysis associated with tracheal intubation. **Br J Anaesth**. 2007; 98(4):524-30.
10. Misron K, Balasubramanian A, Mohamad I, Hassan NF. Bilateral vocal cord palsy post thyroidectomy: lessons learnt. **BMJ Case Rep.** 2014; 24;2014. pii: bcr2013201033.
11. Casella C, Pata G, Nascimbeni R, Mittempergher F, SalerniB. Doesextralaryngeal branching have an impact on the rate of postoperative transient or permanent recurrent laryngeal nerve palsy? **World J Surg**. 2009;33(2):261-5.
12. Serpell JW, Yeung MJ, Grodskis.The motor fibers of the recurrent laryngeal nerve are located in the anterior extralaryngeal branch. **Ann Surg**. 2009r;249(4):648-52.
13. Kandil E, Abdelghani S, Friedlander P, Alrasheedi S, Tufano RP, Bellows CF, Slakey D. Motor and sensory branching of the recurrent laryngeal nerve in thyroid surgery. **Surgery**. 2011;150(6):1222-7.
14. RUSTAD WH. Revised anatomy of the recurrent laryngeal nerves: surgical importance, based on the dissection of 100 cadavers. **J Clin Endocrinol Metab**. 1954;14(1):87-96.

Bilateral tuberculous otitis media; a rare case report

Abstract

Background: Tuberculous (TB) otitis media is a comparatively rare variety of TB usually seen secondary to pulmonary tuberculosis or associated with it [1, 2]. Tuberculosis is one the major infectious disease with predominant involvement of lung and lymph nodes but tuberculosis of the middle ear is relatively rare [3]. Incidence of tuberculosis (per 100,000 people) in Saudi Arabia was 15.00 as of 2012 according to the World Bank data [4].

Tuberculous otitis media is difficult to diagnose because it might easily be confused with other middle ear problems, acute or chronic. Complicating this situation is the fact that physicians are generally unfamiliar with its typical presentation. The final diagnosis is challenging because it needs specific culture and pathologic studies [5].

Early diagnosis and effective treatment may prevent ear damage as well ascentral nervous system complication. The objective of this study was to report a rare case of bilateral tuberculous otitis media to alert physicians to rare presentation of the disease as well as to discuss the diagnosis and management plan based on literature review.

Keywords: Tuberculosis, otits media, pulmonary tuberculosis.

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Case report

A 20-year-old Saudi woman presented to Otology clinic, King Abdullah Medical City, Mecca, Saudi Arabia with recurrent bilateral ear discharge for one and half year on the left side and 10 months in the right side. It was associated with progressive hearing loss and ear discomfort. There was no history of other otological or pulmonary symptoms as well as contact with tuberculous patient were reported.

On examination, the left ear showed a large polyp filling all the external auditory canal surrounded by thick greenish yellow discharge with foul odour. No facial weakness was observed. The right ear showed anteroinferior tympanic membrane perforation. The tympanic membrane was dull opaque, and congested with retrotympanic fullness. Other otolaryngological examinations were unremarkable.

CT scan of the temporal bones showed a soft tissue thinking and opacification of the left middle ear cavity extending to the external auditory canal with thickening in periauricular region. There was opacification of the right mastoid air cells. Laboratory studies revealed a normal white blood cell count and high ESR: 65, high CRP. Audiometry revealed left profound sensorineural hearing loss and tight moderate mixed hearing loss.

The case was diagnosed as bilateral chronic supparative otitis media with cholesteatoma on left side. Left radical mastoidectomy was performed. During surgery, bony erosion and absence of the external auditory canal skin were encountered. The middle ear and mastoid were full of yellowish pale granulation that eroded the cochlea. Granulation adherent to the exposed facial nerve were left in situ. The bone of the middle ear and mastoid was necrotic andfragile. Frozen suction biopsy during surgery showed granuloma. The post-operative course was uneventful. The final biopsy-report showed collections of epithelioid histiocytes and multinucleated giant cells, admixed with lymphocytes, plasma cells and neutrophils. Areas of necrosis and bone destruction were noted.The histiocytes were negative for CD1a and S-100 by immunohistochemistry. Ziehl–Neelsen stain showed a few acid-fast bacilli within histiocytes (Figures 1, 2, 3).

CT Neck, chest, abdomen and pelvis were examined and no pathologically enlarged lymph nodes were observed. The patient was started on Antituberculous triple therapy;Ethambutal, Isoniazide and Pyrazinamide for 6 months followed by Pyridoxineand Rifampicin for 3 months.

The case was followed up every month in the clinic. After 9 months from starting the treatment the left ear showed marked improvementwith no more discharge and complete healed cavity whereas the right ear showed no more discharge as well as healed

perforation.Audiology assessment 6 months post-operative showedno hearing improvement.

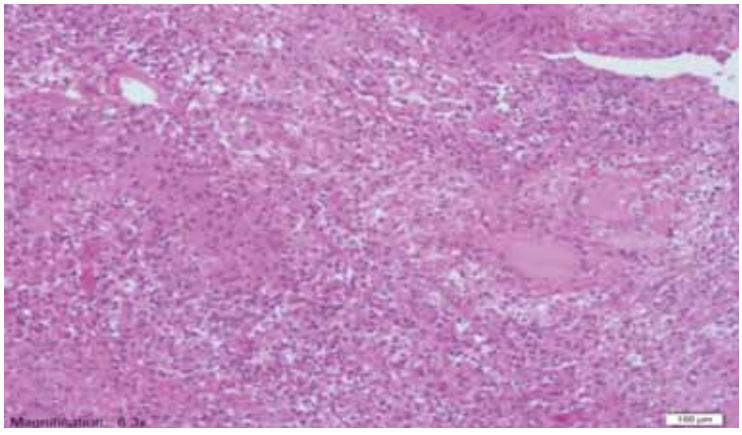

Figure 1: Multiple epithelioidgranolomas with multinucleated giant cells. Hematoxylin & Eosin stain, Magnification 6.3X.

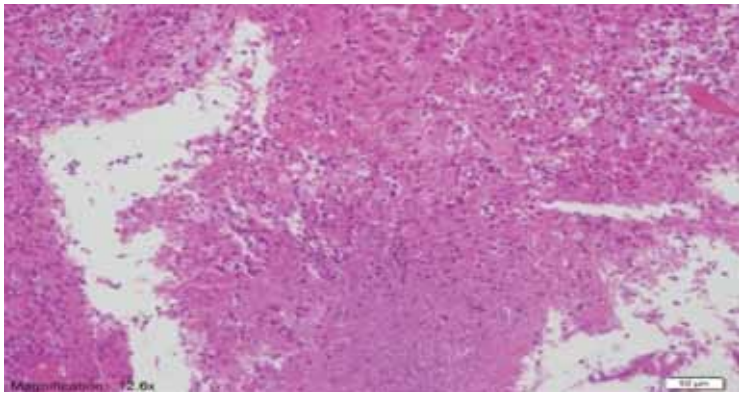

Figure 2: Epithelioid granuloma (upper part) and necrosis (lower part). Hematoxylin & Eosin stain, Magnification 12.6X.

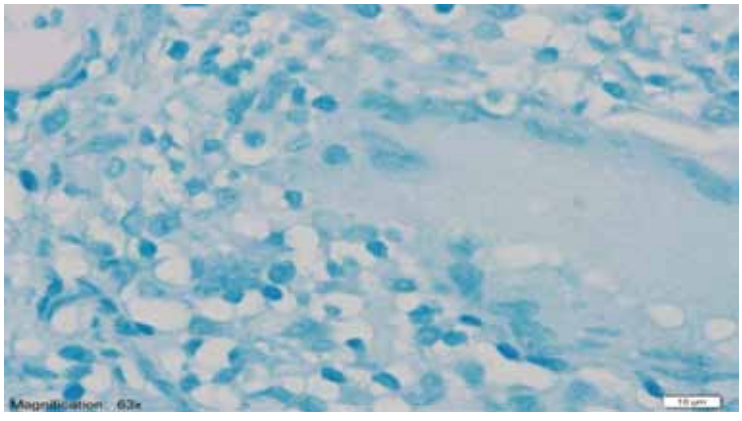

Figure 3: Acid-Fast bacillus within histiocyte. Ziehl-Neelsen stain.Magnification 63X.

Discussion

Middle ear tuberculosis as a primary site of infection is a rare issue [2, 6, 7]. Moreover, it classically affects children more often than adults [6, 8]. The majority of reported cases are unilateral, bilateral presentation like in our case is extremely rare.

The clinical picture of tuberculous otitis media is polymorphic and varying according to the immunological status of patients [9]. The clinical features have changed over the years [12]. It used to present as the triad of pain-free otorrhea, multiple tympanicmembrane perforation, and peripheral facial

palsy. Its currentpresentation has become polymorphic [2]. Rather than pathognomonic features, there are specific findings, the most common of which are:[8] significant otalgia, probably due to pressure caused by granulation tissue within the mastoid; serous otorrhea, which may become purulent due to secondary bacterial contamination [2, 7, 12]. Severe early sensorineural, mixed or conductive hearing loss in 90% of cases is present, which may persist after the infectionhas been completely treated, especially if therapy was initiated late [2, 6, 8, 12]. Our case presented with recurrent bilateral otorrhea for one and half years associated with progressive hearing loss and ear discomfort. Hearing loss was persistent after complete cure indicating late initiation of therapy.

An early diagnosis avoids surgery and complications thus this entity should be included in the differential diagnosis of all recalcitrant otitis [10]. Other chronically suppurative diseases that do not improve with conventional therapy should be considered in the differential diagnosis. These include cholesteatoma, syphilis, Wegener's granulomatosis, fungal infection, eosinophyllic granulomatosis and sarcoidosis [2, 6, 10]. Early therapy is paramount to avoid complications [7]. Once it is started, there is rapid resolution of the infection [10, 13].

Surgery has a minor role but may be useful to provide polyp or granulation tissue for histological examination, and for treating complications [2, 8, 12, 13].

Surgery is needs in aural tuberculosisaims to correct sequelae following medical treatmentand cure of the disease. In our case, we used surgery to have a biopsy and to relieve complications.

In conclusion, the possibility of tuberculosis should be kept in mind in every case of chronic otitis media so the clinical symptoms and signs should be reviewed carefully. Because the clinical features of this disease has been changing over the years. The unusual presentation as bilateral ear involvement should serve as an alert for the possibility of TOM.

References

1. Chyo YS, Lee HS, Kim SW, Chung KH, Lee DK, Koh WJ, et al. Tuberculous otitis media: A clinical and radiological analysis of 52 patients. **Laryngoscope**. 2006 June;116: 921-7.
2. Vaamonde P, Castro C, Garcia Soto N, Labella T, Lozano A. Tuberculosis otitis media: A significant diagnostic challenge. **Head Neck Surg**. 2004;130(6):759-66.
3. Mahajan M, Agrawal D S, Singh N P and D J Gadre. Tuberculosis of middle ear- A case report. **Ind J Tub**. 1995;42: 55.
4. World Bank group. Incidence of tuberculosis (per 100,000 people). Avilable at: http://data.worldbank.org/indicator/SH.TBS.INCD
5. Awan M S, Salahuddin I. Tuberculous otitis media: two case reports and literature review. **Ear Nose Throat J**. 2002 Nov;81(11):792-4.
6. Fajardo CMH, Ostos SIM. Tuberculosis de oido a proposito de uncaso. **Acta Otorrinolaringol**. 1997;9(1):23-8
7. Midholm A, Pedersen B. Primary tuberculosis otitis media. **J Laryngol Otol**. 1971;85(1):1195-2000.
8. Greenfield BJ1, Selesnick SH, Fisher L, Ward RF, Kimmelman CP, Harrison WG. Aural tuberculosis. **Am J Otol** 1995; 16(2):175-82.
9. Midholm A, Pedersen B. Primary tuberculosis otitis media. **J Laryngol Otol**. 1971;85(1):1195-2000.
10. Kirsch CM, Wehner JH, Jensen WA, Kagawa FT, Ampagna A. Tuberculous otitis media. **Southern Med J**. 1995;88(3):363-6.
11. Kulkarni NS, Gopal GS, Ghaisas SG, Gupte NA. Epidemiological considerationsand clinical features of ENT tuberculosis. **J Laryngol Otol**. 2001;115:555-8.
12. Giner AR, Fortuny JC, Iranzo C,Sarroca E, Palomar V. Otitis media tuberculosa. **Anales ORL Iber-Amer**. 1990;5:553-60.
13. Singh B. Role of surgery in tuberculousmastoiditis. **J Laryngol Otol**.1991;105:907-15.

Saudi Journal of Oto-Rhino-Laryngology Head and Neck Surgery Volume 18 No. 1, Jan. 2016

Uncommon relationship between optic nerve and sphenoid sinus: case report

Abstract
Endoscopic sinus surgery became the goldstone surgical procedure in treating paranasal sinuses pathology. This surgery is not free of serious complications including optic nerve injury especially with the wide variation of sphenoid sinus pneumatization which changes their anatomical relationship. We present a case of bilateral freely passing optic nerves through the sphenoid sinus associated with bilateral anterior clinoid processes (ACP) pneumatization, in addition to bilateral vidian nerves (VN) protrusion with pterygoid processes (PP) pneumatization.
Keywords: Optic nerve, sphenoid sinus.

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Background
The optic nerve has a close relationship to the sphenoid sinus but its position can change due to the degree of sinus pneumatization so it may cause a protrusion or even dehiscence into the sphenoid sinus. That is important for the endoscopic sinus surgery surgeons to remember and keep in their mind that this vital structure may not be well protected [1].

Case presentation
We report a case of a 47-year-old man who presented to our department with a long history of bilateral sinonasal polyposis. Routine pre-operative CT scan showed the passage of the optic nerve (ON) through the sphenoid sinus bilaterally associated with bilateral anterior clinoid processes (ACP) pneumatization, in addition to bilateral vidian nerve (VN) protrusion with pterygoid processes (PP) pneumatization (Figures 1, 2) Intraoperatively, upon opening the sphenoid sinus, we found the freely passing optic nerves through the sinus without any bony coverage. Since this was expected from the CT scan appearance surgery was done without any intra or post-operative complications.

Discussion
The literature search shows some studies describing the relationship between the type of sphenoid sinus pneumatization and its adjacent neurovascular structures.
Delano et al. in studying 150 CT scans-300 nerves found ACP pneumatization in 4% (13 cases), ten of these cases were with ON dehiscence, and he classified the passage of the ON through the sphenoid sinus as type III which accounts only for 6% of his study cases [2].
Sapci et al. studied 100 CT scans and noticed ON passage through the sphenoid sinus in 7% (14 cases), 12 of these cases (86%) had ACP pneumatization [3].
Hewaidi and Omami also studied 300 CT Scans and found association between ACP pneumatization and ON protrusion in 17.7% (53 cases), and association between PP pneumatization and VN protrusion in 33% (99 cases) [4].

Figure 1: Coronal CT image of paranasal sinuses: showing pneumatization of anterior clinoid processes (squares), protrusion and dehiscence of optic nerves (circles), protrusion of vidian canals (arrowheads), and pneumatization of pterygoid processes (asterisks).

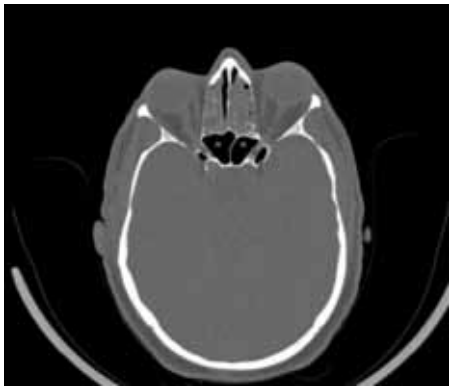

Figure 2: Axial CT image of paranasal sinuses: showing bilateral pneumatization of the anterior clinoid processes (arrows) and bilateral optic nerves (asterisks) inside sphenoid sinus (circles).

Sirikci et al. studied 92 CT scans and found combination between ACP pneumatization and ON protrusion in 41.5% (38 cases) (5).

Conclusion

In conclusion, considering the sphenoid sinus anatomical variations, we learn from this case:

- The importance of pre-operative CT scans in functional endoscopic sinus surgery in showing the sinuses anatomy and discovering any unusual findings as in our case, so to avoid the complications.
- The degree of sphenoid sinus pneumatization will change its relationship with the adjacent neurovascular structures.
- In studying the pre-operative CT scan, we should be aware of the frequent association between the anterior clinoid process pneumatization and optic nerve protrusion or dehiscence, so to be cautious while approaching the sphenoid sinus.

Consent:

Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References

1. Stammberger H (1991) Functional endoscopic sinus surgery. **BC Decker, Philadelphia**.
2. DeLano MC, Fun FY, Zinreich SJ. Relationship of the optic nerve to the posterior paranasal sinuses: a CT anatomic Study. **Am J Neuroradiol**. 1996;17: 669-75.
3. Sapci T, Derin E, Almac S, Cumali R, Saydam B, Karavus M. The relationship between the sphenoid and the posterior ethmoid sinuses and the optic nerves in Turkish patients. **Rhinology**. 2004; 42 (1): 30-4.
4. Hewaidi GH, Omami GM. Anatomic Variation of Sphenoid sinus and Related Structures in Libyan population: CT Scan Study. **Libyan J Med.** 2008; AOP: 080307, Vol. 3, No.3:128-33.
5. Sirikçi et al. Variation of sphenoid and related structures. **Eur. Radiol**. 2000;10:844-48.

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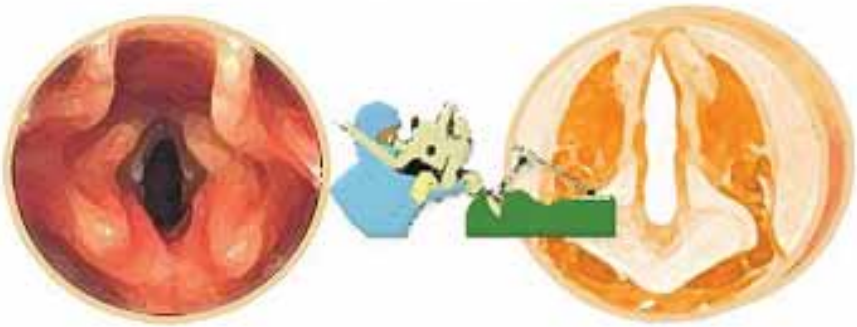

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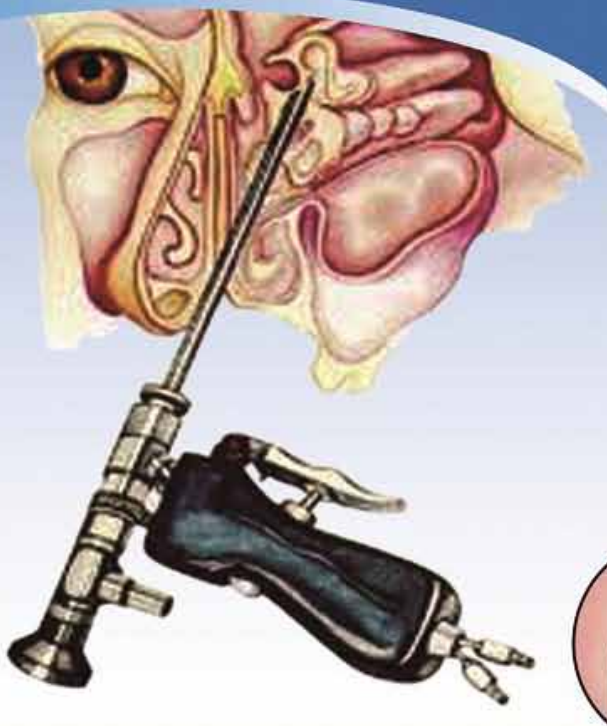

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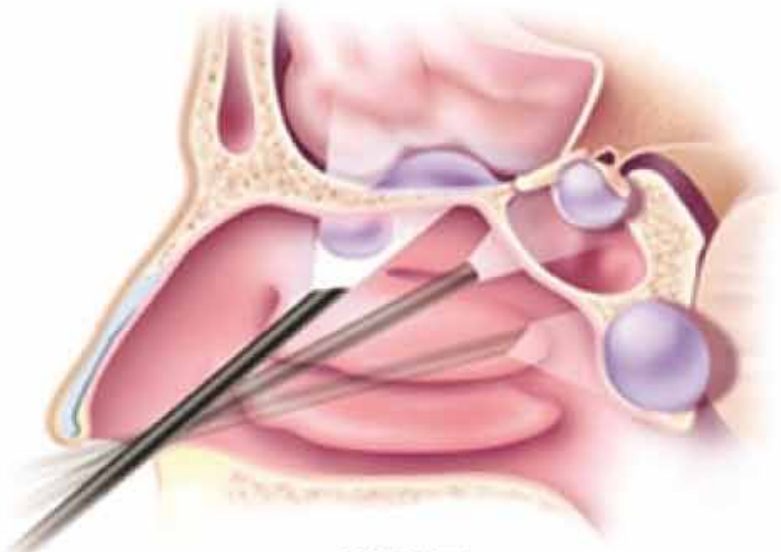

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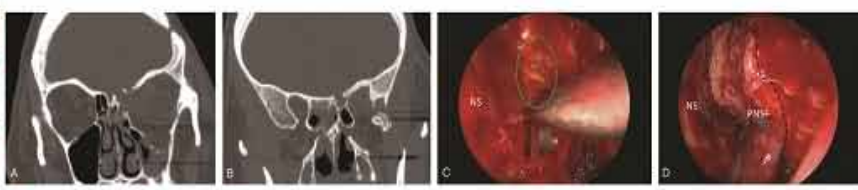

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المجلة السعودية للأنف والأذن والحنجرة
وجراحة الرأس والرقبة

Saudi Journal of Oto-Rhino-Laryngology Head and Neck Surgery

المجلة الرسمية للجمعية السعودية للأنف والأذن والحنجرة

المجلد : ١٨ العدد: ١ يناير ٢٠١٦

المجلة السعودية للأنف والأذن والحنجرة وجراحة الرأس والرقبة مجلة علمية محكمة تصدر عن الجمعية السعودية للأنف والأذن والحنجرة وتعني بنشر البحوث والمقالات في حقل التخصص. لايجوز نشر أو تصوير أو نقل أي من محتويات المجلة بأي أسلوب أو أي شكل آلي أو الكتروني دون موافقة خطية من رئيس التحرير. المجلة غيرمسؤولة عن آراء الكتاب وتعبر المقالات عن آرلء كاتيبيها.

تصدر المجلة السعودية للأنف والأذن والحنجرة جراحة الرأس والرقبة كل ستة أشهر وتوزع علي أعضاء الجمعية السعودية للأنف والأذن والحنجرة واطباء الأنف والأذن والحنجرة في المملكة العربية السعودية كما ترسل نسخ من المجلة إلي مكتبات كليات الطب في داخل وخارج المملكة العربية السعودية.

ردمد ١٣١٩-٨٤٩١

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لجامعات المملكة العربية السعودية ودول مجلس التعاون الخليجي والدول العربية

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