

## Discussion

Surgically handled anal fistulae are notorious for two complications; recurrence and postoperative incontinence (**Seow-Choen and Nicholls, 1992**). Factors which predispose to the occurrence of these complications are failure to identify the extent of the pathology, and distortion of the anatomy from the disease process or by the effect of repeated surgical interventions (**Keighley, 1993**). Failure to identify the extent of pathology, involves improper mapping of the primary tract as well as detection and management of any secondary extensions and abscesses (**Barker et al., 1994**). As regards the choice of the imaging methods in our study, fistulography was correctly identified the internal opening of fistulae in 27% of cases, whereas side tracts were detected in 60% and the anatomical type in 53%. From the above values, fistulography had low accuracy rate with increased incidence of false positive results that proved intraoperatively to be low type. This was found in 7 cases and excluded from our study. This consistent with **Skalej et al., in 1993** who added to the above that fistulography is an invasive technique and carries the risk of dissemination of sepsis. **Weisman et al., in 1991** concluded that this technique was helpful primarily in cases of recurrence where the normal anatomy had been distorted by the previous surgery. Of utmost importance to surgical treatment is establishment of the relationship of any fistula or abscess to the levator ani and puborectalis muscles. This soft tissue anatomy is excellently displayed with magnetic resonance imaging (MRI). The supralelevator and infralelevator compartment are well delineated in the coronal plane.

Sagittal images may provide additional information about the disease along the coccygeal portion of the levator ani muscle (**Myhr et al., 1994**). **Buchanan et al., in 2003** prescribed the use of MRI in 27 patients; and they found that it was accurate in 25 patients as regards the identification of the internal opening and any side tracts. In the present study, MRI was restricted only to 9 cases that were presented with recurrent fistulae as it was costly and not available in our hospital. It was successful in detection of the anatomical landmark of the fistula, the site of the internal opening in 8 cases and side tracts in all cases. By the aid of MRI, the postoperative outcome results were improved. An experienced surgeon is essential to decipher the fistula in the complex anatomy of the anorectal region. Definition of the fistula tract under anaesthesia will guide the treatment plan. This was achieved by careful inspection of the anal crypts, gentle probing of the fistulous tract, injection of saline, hydrogen peroxide, methylene blue or mixture of them to identify the internal opening. The internal opening is found in more than two thirds of fistulae. Once the tract has been defined, the procedure depends on the length of the tract, the anatomic position around the anus, and the amount of sphincter muscle encircled (**Bastawrous and Cintron, 2004**). In our study, the intraoperative assessment of the fistulous tract as regards its direction, course, site of the internal opening and relation of the tract to the anorectal ring was the mainstay in diagnosis of the anatomical type of fistulae. Intraoperative assessment of fistulae was done to

all patients before going to any decision of surgical procedure, we found that it was accurate in detection of the anatomical type of fistulae in 96% of patients, site of internal opening in 94% and side tracts in 92%. These outcome results of the intraoperative assessment of our series were considered to be good in comparison with the results of MRI. The management of high and complicated fistula-in-ano, however, remains a difficult surgical challenge. A simple laying open technique will lead to incontinence when the fistulous tract crosses the sphincter muscle in the upper half of the anal canal. For this reason an alternative strategy like seton and advancement flap were adopted to preserve the sphincter mechanism (**McCourtney and Finlay, 1995**). Although these surgical modalities do minimize incontinence compared with standard fistulotomy, no one procedure has become the magic bullet for anal fistula. (**Perez et al., 2005**). **Dworkasing et al, in 2005** demonstrated that preservation of faecal continence is a paramount consideration, and treatment strategies aim to preserve the integrity of the external sphincter. Fistulotomy, fistulectomy, seton placement, advancement flap closure, and fecal deviating colostomy are traditional techniques for fistula surgery. In general, intersphincteric and low transsphincteric fistulae are preferable treated with fistulotomy, whereas other types of fistulae require stepwise or modified procedures. Fistulotomy is not a suitable surgical option in our series, as it will induce inevitable incontinence. So, we used other

modified surgical modalities to overcome the risk of incontinence, which constitutes a major problem more than the original disease. In group (A) (seton placement), postoperative minor disturbance of continence occurred in 3 patients (12%) apart of the 25 patients; in the form of occasional escape of flatus, when the intraabdominal pressure was raised as during coughing or sneezing. These 3 cases were improved by conservative measures and satisfied by their degree of continence later on. Recurrence of fistulae occurred in 4 cases (16%) at the first 9 months postoperatively and 3 of them developed postoperative infection. **Dennis and his colleagues, in 2003** stated that the reported rate of recurrence and incontinence by the seton use is variable from surgeon to surgeon and is depending on the type of the studied series. They found that the recurrence rate ranged from 0-17% and the rate of incontinence of stool is 17%. **Noble** originally described the rectal flap advancement in 1902, using a full thickness rectal wall flap in the repair of a rectovaginal fistula. This technique was applied to idiopathic fistula-in-ano by **Elting in 1912** and subsequently modified by **Laird in 1948**, who described a partial thickness rectal wall flap. Essentially this technique has been adopted by most authors with modification and most agree that it should be performed after any acute sepsis has settled (**Miller and Finan, 1998, Ortiz and Marazo, 2000**). In our study, core fistulectomy with mucosal advancement flap repair was performed to group (B) of patient. All patients in this group were satisfied with the degree of

continence. Recurrence occurred in 2 patients only (8%) after a mean period of follow up approximately 14 months. One of these recurrences occurred one month postoperatively due to failure of the flap healing. These outcome results were considered good in comparison with other studies that were achieved by many authors. **Amin and his colleagues, 2003** in 18 patients with high fistulae-in-ano by using V-Y advancement flap to cover the internal opening, leaving the site of external opening for drainage while preserving both internal and external sphincters; 83% of patients experienced healing of their fistulae and continence was preserved in all patients. They concluded that this procedure is easy to perform, healing is rapid, and it appears to be effective in curing fistula-in-ano while preserving both external and internal anal sphincters. In the view of previous outcome of flap technique results of our study in group (B) in terms of recurrence and continence disturbance were apparently more favourable than those reported previously particularly in relation to continence status after seton placement in group (A). This is consistent with the most previous results collected by many authors. In group C, patients were treated by injection of autologous fibrin glue after curettage of the fistulous tract and drainage of the external opening. The success rate was 76% in a period of follow up ranged from 6-24 months with a mean approximately 14 months. All patients in this group were satisfied with the degree of continence which was described as satisfactory and exactly similar to their preoperative grading. **Hjortrup et al (1991)**,

were the first investigators to publish a series of patients with fistulae-in-ano successfully treated with fibrin glue injection. The overall success rate was 74%. They suggested that it is safe and potentially useful procedure. **Lindsey et al (2002)**, reported on 19 patients with complex fistulae, the overall healing rate was 80% and fibrin glue did not worsen incontinence scores in any patient. The investigators concluded that patients with complex fistulae should be offered glue as first line treatment, while reserving advancement flaps as second line. In the view of previous observations, we found that there was no one procedure has become the magic bullet for treating high fistula-in-ano. Each procedure had advantages and disadvantages. Regarding the recurrence rate, it was found that group (C) had the highest rate of recurrence (24%). The P value of recurrence rate in this group was significant in comparison with group (A) and group (B). But it was easy method, safe as it was not associated with division of any sphincter muscle, had no any side effects, there were no painful perianal wounds or prolonged wound healing. The least period in the post hospital stay (ranged from 1-3 days with the mean period 1.5 day), did not interfere with any further surgical option if recurrence occurs and it could be repeated with a reasonable rate of cure. The next procedure in the recurrence rate was the seton group (16 %); this method was easy to be done, but carried high risk of incontinence rate (12 %) that correlated with various studies. Also, it was the most painful procedure as it was recorded from

the complaint of the patients and the mean analgesic requirements/day during the post-operative hospital stay. The least percentage of recurrence rates was found in group (B) (8 %), and this was consistent with **Kodner et al, (2000)** who stated that fistulectomy associated with endorectal flap repair is a safe and effective technique for trans-sphincteric and supra-sphincteric fistulae and continence. The main disadvantages of the flap technique were its difficulty due to the narrow surgical field and more experience was needed. Moreover, it had a prolonged post-operative hospital stay that was ranged from 4-9 days with a mean period of 6.5 days. There are many risk factors contributing with fistula recurrence after surgery. The internal fistula opening was easily identified by inspection, palpation of the anal canal and probing of the tract. However, in some cases, the internal opening could not be found even after introducing hydrogen peroxide or other marking agents through the external orifice or by opening of the tract and following the granulation tissue (**Seow-Choen., 1991**). In our study, intraoperative assessment failed to identify the exact site of the internal opening in 4 cases, 3 of them developed postoperative recurrence (one case in group (A) and the other two in group (C)). This is in agreement with **Aguilar, in 1996** which found that the risk of fistula recurrence was greater than 50% when the internal fistula opening could not be identified. The next risk factor contributing with fistula recurrence after surgery is the presence of horseshoe extension. Horseshoe extension was found in 8 cases of our series, 2 of them

developed recurrence after surgery (the 2 cases in group (C)), this is correlated with **Aguilar, in 1996** who stated that the presence of horseshoe extension increases the risk of recurrence up to 13% while fistulae without have only 7% recurrence rate. **Bacon et al., in 1999** found that there is wide variation in the rate of fistula recurrence among surgeons who were performing the procedures. These variations were dependent on the duration of experience in anorectal surgery and number of operations performed during the duration of study. They added that failure to identify the internal opening or all side tracts to their end and faulty postoperative care are account reasons for failure of fistula surgery.

#### Conclusions:

Seton placement, core fistulectomy with advancement flap and injection of fibrin glue were different in difficulty and results. The most successful one was the advancement flap technique, but it was difficult and had prolonged postoperative hospital stay. Fibrin glue injection had the highest rate of recurrence but it was easy, least painful and not associated with division of the sphincter muscles. Seton technique carried the highest risk of incontinence rate, and the most painful one, but its results of curing fistulae were considered to be reasonable.

#### Recommendations:

The anatomical landmark of anal fistula should be detected by different imaging techniques and clinical intraoperative assessment. Importance of the role of MRI in diagnosis of high anal fistula especially the recurrent one. To

avoid recurrence: the internal opening should be detected, good postoperative wound care to avoid postoperative infection and detection of any horseshoe extension and side tracts.

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### الإيجاز العربي

الطرق الجراحية المختلفة لمعالجة الناسور الشرجي العلوى" دراسة مقارنة"

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يمثل الناسور الشرجى مشكلة شائعة نسبيا ونسبة معدل حدوثه ٨,٦ حالة لكل ١٠٠ ألف فرد، وعلاج الناسور الشرجى وخاصة النوع العالى منه يعد مشكلة جراحية صعبة . حيث أنه ما زال استخدام الشق البسيط للناسور أكثر العمليات شيوعا. ويعتبر الشق البسيط للناسور عملية آمنة وفعالة لكثير من حالات الناسور الشرجى . ولكن علاج النوسير المتضمنة جزء كبير من عضلات الشرج المعقدة ربما تشكل خطورة حدوث خلل فى التحكم فى الإخراج (التبرز اللاإرادى) .ومن ثم فإن شق الناسور الشرجى والمعتمد أساسا على شق العضلات القامطة سوف يجعل المريض يعانى من عدم التحكم فى التبرز بدرجات متفاوتة. وما يذكر أن شق الناسور الشرجى العالى المخترق للعضلات القامطة غالبا ما يؤدي إلى خلل فى التحكم فى التبرز .

ولهذا تم تطوير بدائل لشق الناسور ومنها استخدام خيط سيئون أو استخدام شريحة نسيجية شرجية أو حقن مادة الفيبرين اللاصق

اشتملت هذه الدراسة على ٧٥ مريضا يعانون مكن الناسور الشرجى العالى . وقد تم عمل أشعة بالصبغة على الناسور وأيضا أشعة الرنين المغناطيسى لبعض الحالات . وكانت نتائج أشعة بالصبغة على الناسور والتي أجريت لكل المرضى . قد أظهرت الفتحة الداخلية للناسور فى ٢٧% من الحالات فقط وتحديد المجارى الثانوية للناسور فى ٦٠% وكذلك تحديد نوع الناسور فى ٥٣% من المرضى ولقد وجد أن العيوب الرئيسة لهذه الطريقة هى قلة معدل الدقة فى التشخيص وزيادة معدل حدوث نتائج خاطئة.

وقد استخدمت أشعة الرنين المغناطيسى فى ٩ حالات ممن يعانون من إرتجاع متكرر للناسور يعد أكثر من عملية ، وقد نجح فى تحديد المجارى الثانوية للناسور فى كل الحالات ، بينما نجح فى تحديد الفتحة الداخلية للناسور وتحديد نوع الناسور فى ٨ حالات منها.

وكان للتقييم الإكائينيكى أثناء العملية الدور الأساسى فى تشخيص الحالات ، حيث أنه أجرى على جميع المرضى الذين شملهم البحث وهو يعتبر الركيزة الرئيسة فى التشخيص، وقد وجد أن نسبة الدقة فى تحديد نوع الناسور وصل إلى ٩٦% وإظهار الفتحة الداخلية للناسور فى ٩٤% كما تبين أنه طريقه جيدة فى تحديد مجرى الناسور الجانبى المتشعب والذى وصل إلى ٩٢% من حالات الناسور المتشعب

ولا يعتبر شق الناسور الوسيلة الجراحية المناسبة فى التعامل مع حالات الناسور العالى حيث إنها تؤدي حتما إلى خلل فى التحكم . ولهذا تم استبدال طرق جراحية أخرى لتجنب هذه المشكلة . وقد تم تقسيم حالات البحث إلى ٣ مجموعات متساوية كل مجموعة اشتملت على ٢٥ مريضا وخضعت لطريقة جراحية محددة مع دراسة مقارنة لكل طريقة من هذه الطرق:

- مجموعة (أ) وتم علاجها باستخدام خيط سيئون القاطع
- مجموعة (ب) وتم علاجها بواسطة تسليك وشق الناسور مع إستخدام شريحة من الغشاء المخاطى للشرج
- مجموعة (ج) وتم علاجها بواسطة مادة الفيبرين اللاصق

وبالدراسة المقارنه لمحصلة النتائج لكل المجموعات ، وجد ان معدل لارتجاع الناسور في المجموعة (ج) والتي استخدم فيها حقن مادة الفيبرين اللاصق حيث بلغت ٢٤% بالرغم من كونها طريقه سهله وآمنه ولا تحتاج إلى قطع عضلات الشرج وأقل الطرق التي تسبب ألما للمريض بالإضافة إلى مدة إقامة المريض بالمستشفى أقل من الطريقتين الأخرين. والطريقة التاليه وهى استخدام خيط سيتون القاطع حيث بلغ معدل الارتجاع ١٦% وبالرغم من أنها طريقه سهله وآمنه ولكنها مصحوبه بنسبة كبيرة من خلل بالتحكم حيث بلغت ١٢% ، ولكن كل هذه الحالات تحسنت بالطرق العلاجيه التحفيظية. بالإضافة إلى انها تسبب ألما شديده للمرضى مع زيادة متوسطه استخدام الجراحات المسكنه بعد العملية.

وقد سجلت أحسن النتائج فى هذه الدراسة فى المجموعة (ب) وهى استفاد شريحة من الغشاء المخاطى للشرج ، حيث انها حققت أقل نسبة ارتجاع ٨% ولم تؤثر على حالة التحكم فى التبرز لكل المرضى. وكان من اهم عيوب هذه الطريقة انها عملية صعبة لأن المجال الجراحي لإجراء هذه العملية ضيق وتحتاج إلى خبرة فى التعامل مع الشريحة النسيجية.

وقد تبين من هذا البحث أنه يوجد عوامل لها تأثير مباشر وكبير فى حدوث ارتجاع الناسور الشرجي العالى بعد إصلاحه، من أهم العوامل هم عدم التوصل إلى تحديد مكان الفتحة الداخلى للناسور والتي لم يتم تحديدها فى ٤ حالات من ٧٥ حالة شملهم هذا البحث وقد حدث ارتجاع لثلاثة منهم. والعامل التالى فى حدوث ارتجاع الناسور العالى هو الالتهاب الشديد للجروح بعد العملية ولأسباب مختلفة وقد لوحظ ذلك فى ٨ مرضى حيث ارتجاع للناسور فى ستة منهم.

وفي النهاية نوصى:-

١. أهمية تحديد نوع الناسور بمختلف الطرق التشخيصية المتاحة.
٢. أهمية دور أشعة الرنين المغناطيسي فى حالات الناسور المرتجع

ونستنتج من هذا البحث:

أنه لا يوجد طريقة مثلى للعلاج ولكن لكل طريقة عيوبها ومميزاتها , وأفضل هذه الطرق رغم صعوبتها هي طريقة استفاد الشريحة النسيجية من الغشاء المخاطي للشرج.



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