Original Article

Early complications of tension free open mesh repair for inguinal hernia, Khartoum Teaching Hospital

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Abstract

Background
Traditional suture repair of inguinal hernia is fast giving way to routine tension-free mesh repair. In many countries, mesh repair is now more common than suture repair.

Objectives
To evaluate the use of open mesh repair for inguinal hernia and its early complications.

Patients and Methods
This is a prospective study, conducted during a period from March 2010 to September 2011. One hundred and three patients who had open polypropylene mesh repair for inguinal hernia in Khartoum Teaching Hospital were studied.

Results
A total of 103 patients were included, 12 of them (11.3%) developed wound hematoma, 12 (11.3%) experienced numbness at the site of operations, 11 (10.7%) had scrotal swelling, 9 (8.7%) developed seroma and 4 (3.9%) showed evidence of neuralgia at the site of operations, all of them didn't warrant major intervention.

Conclusions
Mesh repair of inguinal hernia is a simple, safe and effective procedure with minimum early postoperative complications.

Keywords: Inguinal hernia, mesh repair, complications.

Introduction
Inguinal hernia regardless of the type is one of the most common diseases that a surgeon has to manage. Over the age of 75, almost half of the male population had a hernia or had been operated on for hernia. Improved surgical techniques and a better understanding of the anatomy and physiology of the inguinal canal have significantly improved the outcomes in many patients.

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Inguinal hernia repair has been evolving for the past 130 years and the pace of evolution accelerated in the last decade with the introduction of the tension-free mesh repair, the laparoscopic repair and the growth of the specialist hernia clinics\(^2\).

Traditional suture repair of inguinal hernia is fast giving way to routine tension-free mesh repair. In many countries, mesh repair is now more common than suture repair\(^3\).

Lichtenstein presented his open mesh repair technique for inguinal hernia in 1986. The Lichtenstein technique has since become the most commonly used (with various modifications) on account of its ease of operation and because it provides a tension-free repair with good long-term results\(^4\).

The advantages of this repair were its association with less pain, rapid postoperative recovery, early return to normal activity and very low recurrence rate\(^6\).

Tension-free mesh repair nevertheless, is associated with early complication which is defined as that occurring within one month of surgery such as infection and pain, as direct result of either the surgical procedure and/or anaesthesia. Other complications include skin anaesthesia, bruising, hematoma, seroma, orchitis, recurrence and testicular atrophy were also reported\(^6,7\).

A large number of materials have been tested, but currently three are in common use: polyester mesh (dacron, mersilene), polypropylene (marlex, prolene) and expanded polytetrafluoroethylene (ë-PTFE)\(^8\).

**Patients and Methods**

In this prospective study, we analyzed 103 consecutive patients who attended Khartoum teaching hospitals from March 2010 to September 2011.

All patients presented with inguinal hernia to Khartoum teaching hospital and accepted to take part in the study were involved. Patients below 18 years, those with chronic constipation, chronic cough, symptoms of prostatism, irreducible hernia, obstructed hernia and strangulated hernia were excluded.

A questionnaire designed for this study was used for data collection, involving the age, sex, occupation, side, type, grading of hernia, whether it is recurrent or not, type of anaesthesia, operator, duration of surgery, use of antibiotics, postoperative analgesia, hospital stay, early complication; hematoma seroma, wound infection, scrotal swelling, numbness and neuralgia.

Open polypropylene mesh hernioplasty was used for all patients.

Prophylactic antibiotics were given with induction of anaesthesia in a form of second generation cephalosporin (cefuroxime). Polypropylene 2/0 suture material was used to fix the mesh, to conjoint tendon and inguinal ligament in interrupted manner. Patients were followed for complications for one month postoperatively. Data were analyzed using the SPSS program. Parameters were expressed in percentage or mean ± SD. Comparison between qualitative variables was made by using chi-square test. A p value < 0.05 was considered significant.

**Results**

The number of patients included in the study were 103 patients, 95% of them were males (n=98) and 4.9% were females (n=5).

Ages of the patients ranged from 20 to 80 years, with a mean age of 43.203 ±14.41 years.

Seventy-five patients (72.8%) had right sided inguinal hernia while in 24 patients (23.3%) it was on the left side and 4 patients (3.9%) had bilateral inguinal hernia. Eighty-two patients (79.6%) had indirect hernia and 21 (20.4%) had direct hernia.

Sixty-eight patients (66%) presented with bubonocele or funicular type of inguinal hernia while 35 patients (34%) presented with
inguinoscrotal hernia. Twelve patients in the group (12.7%) were diabetics. Ninety patients (87.4%) had spinal anaesthesia, 10 patients (9.7%) had general anaesthesia, while 3 (2.9%) were done under local anaesthesia. All patients received prophylactic antibiotics in a form of second generation cephalosporin (cefuroxime) before the induction of anaesthesia. Seventy-six patients (73.8%) were operated on by registrars, 23 (22.3%) by consultants, while 4 patients (3.9%) by junior doctors under supervision of registrars or consultants. Duration of surgery was less than 1hr in 39.8%, and more than 1hr in 60.2%. Sixty-eight patients (65%) stayed in the hospital less than 2 days. Twelve patients (11.3%) developed wound hematoma, another 12 patients (11.3%) experienced numbness at the site of operations, 11 patients (10.7%) had scrotal swelling, 9 patients (8.7%) showed evidence of seroma and 4 patients (3.9%) had neuralgia at the site of operations Fig 1.

Fig (1): percentage of post operative complications

Discussion
For a century, surgical treatment of inguinal hernia was based on suture. Today reinforcement of the groin region by mesh materials is increasingly preferred. Over 1 million meshes per year are implanted for hernia repair worldwide. Successful treatment of groin hernias is of major socioeconomic importance\(^9\). Hernia has an impact on the community by affecting the productive age group\(^{10}\). In this study, the mean age of patients affected was 43.203 ±14.41 years which is the productive age group. Inguinal hernia has a male predominance with male to female ratio 19:1\(^{10}\).

In our study, 90 (87.4%) of patients were operated under spinal anaesthesia, which provides excellent pain control during herniorrhaphy, and it carries slightly less risk than general anesthesia\(^8\). The disadvantages of spinal anaesthesia include the time required for the anaesthetic to be placed and the possibility of incomplete sensory loss. Urinary retention or a delay in the return of normal lower extremity sensation; however, the cost compared to general anaesthesia is lower\(^{11}\). Of the 4 patients (3.9%) who developed wound infection, 3 patients developed superficial wound infection that was treated with regular dressing and antibiotics and only one patient with deep wound infection treated with removal of mesh\(^8\). Scrotal swelling occurred more common in age group 40-60. All patients with scrotal swelling were treated with analgesia and scrotal support. Scrotal swelling occurs more common in inguinoscrotal hernia in around 22 % \((P=0.004)\) Table (1).

<table>
<thead>
<tr>
<th>Scrotal swelling</th>
<th>Yes</th>
<th>No</th>
<th>Total 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grading</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inguinal</td>
<td>3</td>
<td>65</td>
<td>68</td>
</tr>
<tr>
<td>Inguino scrotal</td>
<td>8</td>
<td>27</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>92</td>
<td>103</td>
</tr>
<tr>
<td>((P=0.004))</td>
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Wound hematoma was more common in age group >60. It occurs more common in patients with recurrent hernia (P=0.020). All patients with wound hematoma were treated conservatively.

Numbness was more common in patients with recurrent inguinal hernia, and it was seen in 11.3% of our patients, which is similar to figure reported by Khan et al[2].

Seroma is a collection of serum in a surgical wound; it contains leukocytes and may also contain some red blood cells[12]. The size of the collection relates to the amount of dissection done between tissue planes and the amount of dead space remaining in the wound[13]. Of 9 patients (8.7%) who developed seroma, five were treated conservatively and 4 were treated with aspiration under aseptic technique. Which is similar to figure reported by Stephenson et al[14].

Severe pain after groin hernia repair is uncommon, but potentially debilitating. Of the 4 (3.9%) patients who developed neuralgia at the site of operations all were treated conservatively with analgesia. No patients needed nerve exploration. This is comparable to what reported by Aasvang et al[15].

In conclusion, tension-free mesh repair is a simple, safe and effective method of treatment for inguinal hernia with minimal early postoperative complications.

References
