Inguinal hernioplasty by darning versus prosthetic mesh

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Abstract

To compare two tension free techniques, darning versus mesh repair in cases of inguinal hernia. Prospective study was done in Tikrit Teaching Hospital. Ninety-six patients with non-obstructive unilateral reducible and primary inguinal hernia 48 patients operate with mesh and other 48 patients operate with darn repair. The two techniques where compared with respect to effectiveness, post-operative complications, and recurrence rate. Over all post operative complications were 27.1%, 31.3% in darn group and mesh group respectively. In darn group, wound infection occurs in 8.3%, scrotal haematoma in 12.5%, urine retention in 4.2%, and nerve pareses 2.1%. In mesh group, wound infection occurs in 22.9%, scrotal haematoma 8.3%, no recurrence observed in both study groups in one year follow up. As a conclusion; Darn repair is equally effective and much less costly treatment for inguinal hernia than mesh repair which had more risk of infection.

Key Word: darning repair, mesh repair, inguinal hernia

Introduction

Inguinal hernia repair, which accounts for 10-15% of all surgical procedures(1). It is doomed to failure unless rendered free tension, it constituting 73% of all external hernia. (2) are a common clinical problem. Surgery is indicated in many hernias to prevent complications; these patients must be thoroughly evaluated before hernia repair. (2) Fortunately, most inguinal hernias are repaired electively to prevent strangulation. (3) Gilbert in 1987 classified four basic technique for hernia repair (4)

These include pure tissue repair, combined tissue and prosthetic repair, pure prosthetic repair and darn. Good result has been shown by shouldice method but British method Nylon darn show effectiveness in preserving deep groin anatomy (5). Many surgeons use darn as sole method for inguinal hernia repair. (6)

A better result are obtained with lichenstein (mesh) repair, but is costly, because of poor socioeconomic status, non-affordability of patients and non-availability of mesh in small cities darn technique was chosen to ascertain its effectiveness, post operative complications and recurrence. (1)

The advantage of darn repair lies in the fact that it does not require mesh so it is much less expensive (7). The socio-economic background makes cost a factor which prevents a substantial number of cases from seeking treatment before they develop some major complications. The two techniques where compared with respect to effectiveness, post-operative complications, and recurrence rate. (2)

Patients and Methods

This study was carried out in department of surgery /Tikrit teaching hospital from the period of January 2005 to June 2007. A total of 110 hernia patients were enrolled for the study but five bilateral and nine recurrent cases were excluded.

All patients were in age of 16-58 years and presenting with non-obstructive unilateral reducible and primary inguinal hernia. All patient had to have their clinical chemistry parameters like routine blood
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tests, blood sugar, serum urea/creatinine, chest X-ray, ECG, and vitals checked and within normal limits to get clearance for surgery.

Patients were randomly divided into two groups irrespective of their age and sex. 48 patients operate with mesh and other 48 patients operate with darn repair.

In the mesh group, a sheet of polypropylene mesh (7.5 x 15) was trimmed to fit the adequately dissected out space, with a slit cut laterally to accommodate the spermatic cord.

The mesh overlapped the pubic tubercle by 1-2 cm medially and superiorly extended over the conjoint tendon to lie 2-3 cm lateral to internal ring. The mesh was then fixed in position by continuous 2-0 nylon sutures starting along the internal surface of the inguinal ligament infero-medially and continuing laterally as far as the incision would allow. Three to four interrupted stitches helped fix the mesh superiorly. The two tails were now overlapped lateral to the internal ring and secured by two to three interrupted stitches making sure that the cord was not constricted.

In the darn group, a 1-0 monofilament nylon suture was used to reconstruct the inguinal bed with tension-free darn starting with good strong bite off the tough tendinous structures near the pubic tubercle and emerging out through the lateral edge of the rectus sheath with bulky bite in between. The loosely interwoven bites continued laterally and the back-forming two to three rows of continuous stitches were placed in staggered manner to spread the tension between the fibers of the inguinal ligament. The Aberdeen knot was used to avoid a thick nylon knot at the end. A gap of 0.5-1 cm was maintained between the stitches to obtain a closely knit darn.

In both groups having checked for haemostasis meticulously and after replacing the safeguarded iliohypogastric nerve and cord structures, the external oblique aponeurosis was closed within 2-0 continuous nylon sutures. The skin was apposed using 3-0 simple interrupted mersilk sutures.

Patients were discharged from hospital in third day of operation, stitches were removed on tenth post operative day on the average. All patients were seen at 1, 2, 6, and 12 months and were assessed for any residual complications and recurrences.

Results

Ninety-six cases were included in the study; the with average age was 34.7 years range (16 – 58) years. Ninety (93.7%) of the patients were males and six (6.3%) were females. as shown in table (1).

Eighty (83.3%) of cases were indirect inguinal hernia and sixteen (16.7%) of cases were direct hernia as shown in figure 1. Over all post operative complications were 27.1%, 31.3% in darn group and mesh group respectively, as shown in table (2).

In darn group, wound infection occurs in 8.3%, scrotal haematoma in 12.5%, urine retention in 4.2%, and nerve pareses 2.1%. In mesh group, wound infection occurs in 22.9%, scrotal haematoma 8.3%, no recurrence observed in both study groups in one year follow up as shown in table 2.

Discussion

The objective in inguinal hernia repair is to provide a tension free repair when there is posterior inguinal wall weakness. The British method "nylon darn" has shown to be effective in preservation of deep groin anatomy. Many surgeon use the moloney darn as their sole method for inguinal hernia repair, while others hold the view that bassini repair is the best method, if correctly performed.
However other methods like shouldice and mesh implantation are showing good results, even better than bassini, which is easier to performed by any junior surgeon, easier to teach, less time consuming but disadvantage of this method is tension on suture line and increase recurrence rate. These problems are overcome by tensionless repair, use of prosthetic mesh or by nylon darning.

Darn repair is difficult to perform, but can be used for primary (direct, indirect) hernias with weak posterior wall and recurrent hernia.

In our study as primary outcome, we record 27.1%, 31.3% complications in darn and mesh group respectively as evident from table 2, Molony achieved recurrence as low as 0.8% with inguinal darn repair. Abrahmson was the first to point out the defect that could lead to high recurrence rate in darn repair. His series for more than 1000 repairs reported in 1995 recorded recurrence rate as low as 0.8%. Lifschutz and Kingsnorth achieve similar result in recent times.

Koukourou in 2001 and Chakraborty in 2007 compared the darn with mesh and reported no difference in early and late complications and achieved comparable recurrence rate. Kingsnorth in 1992 and Thapar in 2000 had already achieved better result with darn technique in comparison with shouldices technique.

There was no major difference in the post operative complication between the two groups we studied; only 22.9% of our mesh group recorded wound infections in comparison with 8.3% in darn group. Secrotal hematoma recorded were 8.3% in comparison with 12.5% in darn group. Koukourou had recorded no difference in early and late complication.

Qazi et al records a post operative infection incidence of 12% with darn and 8% with mesh repair, they however noted 6% scrotal hematoma in their darn repair and 2% in their mesh group. Chakraborty et al recorded wound infection in 12% of mesh group and 6% of darn group, also 6% of scrotal hematoma of both groups and no cases of nerve entrapment neuralgia while 2.1% in our study.

There were no recurrences noted in one year follow up in any of two groups under study. Our finding compare well with 0.8% recurrence rate of Moloney in 1958 and Abrahmson in 1995, more recently Omer Farooq reported 0.6% recurrence with darn repair. Millis in 1998 and Chakaborty in 2007 similarly recorded no recurrence in mesh and darn repair.

As a conclusion, although mesh repair for inguinal hernia became more common used recently, a well constructed darn repair is equally effective and much less costly treatment for inguinal hernia than mesh repair which had more risk of infection.

References
4- Gilbert. Prosthetic adjuncts to groin hernia repair, Advances and improvements in hernia repair. 1987:132-4
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Fig 1: Types of inguinal hernia in study sample
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Table (1) the distribution of the study sample by age and sex.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>No.</th>
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<td>Age (years)</td>
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<tr>
<td>&lt;20</td>
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<td>20-39</td>
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<td>≥40</td>
<td>35</td>
<td>36.5</td>
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<tr>
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Table (2) Post-operative complications in two groups

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<th>Mesh</th>
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<tr>
<td></td>
<td>No.</td>
<td>%</td>
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<tr>
<td>Wound infection</td>
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<tr>
<td>Haematoma</td>
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<td>12.5</td>
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<td>Urine retention</td>
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<td>0</td>
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<td>Nerve pareses</td>
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