

Using mesh hernioplasty to patient with inguinal Hernia

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الخلاصة

يهتم البحث في تقييم النتائج السريرية لعمليات ترقيع الفتق الأربي من حيث التجمع الدموي، خمج الجروح، وامكانية تكرار الفتق مجدداً، مع إشارة خاصة إلى العمليات الجراحية التي يتم إجرائها من قبل الجراحين المتدربين. لقد تم إجراء ما مجموعه خمسون عملية للمرضى الذين كانوا يعانون من فتق أربي خلال فترة الدراسة. واستخلص نتيجة لهذه الدراسة أن استخدام الشبكة (mesh) في عملية ترقيع الفتق هو أفضل بكثير من العملية التقليدية و يقلل من تكرار لهذا المرض، في حين ترتبط هذه العملية الكلاسيكية إلى تكرار لهذا المرض أيضاً يمكن أن تقلل من ظهور القيلة، و خمج الجروح، في حين ترتبط العملية الكلاسيكية إلى ظهور التجمعات الدموية والتهابات الجروح ما بعد العملية. ليس هناك فرق كبير بين الطريقتين فيما يتعلق بظهور المصول (seromas).

Abstract

To clinically evaluate the outcome of Inguinal Hernioplasty in terms of haematoma, wound infection and recurrence, with special reference to surgery done by trainee surgeons. A total of 50 patients with inguinal hernia were operated during the study period. The result of the present study concluded that using mesh for surgical operation of hernia is much better than the ordinal operation of hernia because this technique reduces the recurrence of the disease, while the classical operation is related to recurrence of the disease. Also Mesh can reduce the appearing of hematomas, Wound infections after the operation, while the classical operation is related to appearing of the hematomas and Wound infections after the operation. Further more there is no significant difference between the two methods regarding appearing of seromas after the operation however, its appear among those patients which did a classical operation more than those which using mesh for operation. So *In our set-up Mesh Hernioplasty has proven to be effective with low complication and recurrence rates.*

Key words: Hernioplasty, Mesh Repair, Recurrence, seroma, Inguinal Hernia

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Introduction

Hernias occur when body organs protrude through the connective tissue which normally protects them and keeps them in place. It creates a distinctive bulge, and it can lead to complications such as death of the herniated tissue. Hernias especially inguinal hernias, being the commonest type, are a problem which has been dealt by physicians since the time of the Egyptian pharaohs. The mummy of Ramses 5th shows a hernial sac in the groin(1). The hernia problem was referred to by Hippocrates as “etrurhexis”, which means “rupture of abdominal wall”. The distinction between the direct and the indirect inguinal hernias was made by Stromayer in 1559. The picture became more clear with the description of the “processus vaginalis” in 1790 by John Hunter, and the “fascia transversalis” and the “Cooper's ligament” in 1804 by Sir Astley Cooper (2). There has been a lot of debate and different methodologies were adopted for what is considered an anatomical (mechanical) problem. The three layered technique originally described by Bassini (3) in 1887 changed the ways hernias were managed. It has since been “modified” by various authors and hence the original technique is no longer taught to the newer generation of surgeons. Earl Shouldice (4) in 1953 described a modification to the Bassini's repair, relying on a 4-layer closure through a special continuous suturing technique thus doubling the fascia transversalis. His series of 8317 hernias over a 10 year period showed a recurrence rate of 0.8%. One big drawback of both the “original” Bassini's and Shouldice repairs is that the surgeon in training may find the method difficult to master and achieve good results (5). The posterior iliopubic tract technique was championed by Nyhus(6); the main strength of this repair comes from suturing the arch of the transversus abdominis aponeurosis to the iliopubic tract. The recurrence rate has been reported as around 2%. The first non-metallic fabric (Dacron) was knitted into a mesh (Mersilene) in 1939. Usher introduced in 1950 the polypropylene mesh(7) (Marlex). Lichenstein and Shulman (8) in 1986 described their simple, easy to learn yet effective technique. Irving Lichenstein was the one who popularised tension free techniques as an every

day, outpatient procedure under local anaesthesia. Stoppa (9) in 1975, introduced his technique to repair huge groin hernias by using a giant mesh posteriorly through a midline incision. A plug and mesh (Gilbert-Rutkow) or a polypropylene device Prolene Hernia System (PHS) has been advocated by Gilbert (10) for day case inguinal hernia repair. A 1.5% recurrence rate has been recorded after long term follow up though Fasih et al (11) has quoted a figure of 0.5%. In 1990 special techniques to repair the groin hernias such as TAPP (transabdominal preperitoneal approach (12) and TEP (total extraperitoneal approach) were started. The basis of the repair, independent of the type of approach, is the use of a large piece of mesh to cover all the three potential sites of the hernia defects i.e. indirect, direct and femoral (13). Laparoscopic hernia repairs are less painful than open repairs and allow an early return to work; however they may be associated with serious complications and certainly have a much higher hospital costs (14). Long term data is slowly becoming available regarding this newer modality of treatment. Desarda (15) in 2001 postulated that inguinal hernia operations are generally based on anatomical considerations alone and the failures of such operations are due to lack of consideration of physiological aspects. Many patients with inguinal hernia are cured as a result of the current surgical techniques, though factors that prevent hernia formation are not restored. Hence, the surgical physiology of the inguinal canal needs to be reconsidered. This is an interesting new concept thus in the present study we tried to carry out the mesh method to evaluate the outcome with reference to haematoma formation, wound infection, seroma, and recurrence. All patients were operated in our shorsh hospital.

Materials and Methods

Study design

This study was carried out from September 2010 to August 2011 in Surgical Unit of Shorsh Hospital in Al-Sulaimaniyah city. All our patients (50 cases) admitted with inguinal hernia. Patients operated in emergency. All patients were evaluated for symptoms

like chronic cough, constipation and prostatism, and had appropriate investigations done. Patients were optimized for the above described conditions and co-morbidities like diabetes, anaemia and hypertension. Patients were seen in the pre-anaesthesia clinic and surgery was carried out after fitness. General anaesthesia was used where it was thought to be safer. Analgesia was provided on patients required need (PRN) in the form of intra-muscular Diclofenac sodium for 24 hours postoperatively, followed by oral analgesia. First generation cephalosporin like Cephadrine or Coamoxiclav was used as prophylactic antibiotic; the first dose was administered at the time of induction of anaesthesia and a second dose eight hours postoperatively. Patients had the initial dressing removed after 48 hours and then povidone-iodine was applied and the wound dressed regularly. All data was collected on a pre-designed proforma. The record was duplicated on the computer in the SPSS Version 10. Out patient follow-up was done for 6 months as a minimum.

Surgical Technique

Standard open technique as described by Nelson(16) was used for both direct and indirect hernial sacs. The corners of the polypropylene mesh (6 x 11cms) size were trimmed and a slit, nearly half the length of the mesh, was created for the cord to go through. The lower edge of the mesh was anchored to the inguinal ligament with 2/0 polypropylene in a continuous manner starting at the pubic tubercle and ending just beyond a coincident point past the level of the deep ring. The mesh was next anchored by 3 to 4 interrupted stitches to the conjoint tendon and internal oblique muscle. The upper leaf of the mesh is pulled over the lower leaf like a double breast coat and the lower edge of the upper leaf and lower edge of the lower leaf together were stitched with 2/0 polypropylene to the inguinal ligament. Care was taken that the opening, the “new” deep ring, from where the spermatic cord passed was optimally snugged; this was tested by trying to get the tip of the little finger in. Haemostasis was secured and external oblique closed with ‘0’ polyglycolic acid suture. As a routine no drain was placed. Skin was closed with a subcutaneous 2/0 polypropylene suture.

Results

50 patients suffering from hernia treated by surgical operation using mesh, comparison with the classical surgical operation methods.

Table 1: Comparison between using Mesh in surgical operation of hernia with classical method for surgical operation of hernia by recurrence of disease.

Recurrence of disease	Using Mesh	Classical methods	TOTAL
No	45	18	63
Row %	71.4	28.6	100.0
Col %	90.0	36.0	63.0
Yes	5	32	37
Row %	13.5	86.5	100.0
Col %	10.0	64.0	37.0
TOTAL	50	50	100
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100

	Point	95% Confidence Interval	
	Estimate	Lower	Upper
PARAMETERS: Risk-based			
Risk Ratio (RR)	5.2857	2.3049	12.1217
STATISTICAL TESTS	Chi-square	1-tailed p	2-tailed p
Chi-square - Mantel-Haenszel	30.9614		0.0000000000
Chi-square - corrected (Yates)	29.0004		0.0000012416
P Value		0.0000000119	

Show that there is a statistical significance between two methods of surgical operation of hernia, p value <0.05 , and the Risk ratio of recurrence of hernia among patients who used a classical methods is 5 times more than patients whom used for them a mesh for operation.

Table 2: Comparison between using Mesh in surgical operation of hernia with classical method for surgical operation of hernia by appearing Hematomas.

hematoma	Using Mesh	Classical methods	TOTAL
No	47	18	65
Row %	72.3	27.7	100.0
Col %	94.0	36.0	65.0
Yes	3	32	35
Row %	8.6	91.4	100.0
Col %	6.0	64.0	35.0
TOTAL	50	50	100
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

	Point	95% Confidence Interval	
	Estimate	Lower	Upper
PARAMETERS: Risk-based			
Risk Ratio (RR)	8.4359	2.8294	25.1518 (T)
STATISTICAL TESTS	Chi-square	1-tailed p	2-tailed p
Chi-square - Mantel-Haenszel	36.5974		0.0000000000
Chi-square - corrected (Yates)	34.4615		0.0000000000
P value		0.0000000002	

This table show that there is a statistical significance between two methods of surgical operation of hernia, p value <0.05, and the Risk ratio of getting Hematoma among patients who used a classical methods for operation, after surgery is 8 times more than patients whom used for them a mesh for operation.

Table 3: Comparison between using Mesh in surgical operation of hernia with classical method for surgical operation of hernia by appearing wound infection.

METHOD			
Wound infection	Using Mesh	Classical methods	TOTAL
No	47	16	63
Row %	74.6	25.4	100.0
Col %	94.0	32.0	63.0
Yes	3	34	37
Row %	8.1	91.9	100.0
Col %	6.0	68.0	37.0
TOTAL	50	50	100
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

	Point	95% Confidence Interval	
	Estimate	Lower	Upper
PARAMETERS: Risk-based			
Risk Ratio (RR)	9.2011	3.0803	27.4840
STATISTICAL TESTS	Chi-square	1-tailed p	2-tailed p
Chi-square - uncorrected	41.2269		0.0000000000
Chi-square - Mantel-Haenszel	40.8147		0.0000000000
Chi-square - corrected (Yates)	38.6100		0.0000000000
P value		0.0000000000	

This table show that there is a statistical significance between two methods of surgical operation of hernia, p value <0.05, and the Risk ratio of getting Wound infection among patients who used a classical methods after surgery is 9 times more than patients whom used for them a mesh for operation.

Table 4: Comparison between using Mesh in surgical operation of hernia with classical method for surgical operation of hernia by appearing Seroma

METHOD			
Seromas	Using Mesh	Classical methods	TOTAL
No	40	33	73
Row %	54.8	45.2	100.0
Col %	80.0	66.0	73.0
Yes	10	17	27
Row %	37.0	63.0	100.0
Col %	20.0	34.0	27.0
TOTAL	50	50	100
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

	Point Estimate	95% Confidence Interval	
		Lower	Upper
PARAMETERS: Risk-based			
Risk Ratio (RR)	1.4795	0.8672	2.5239 (T)
STATISTICAL TESTS	Chi-square	1-tailed p	2-tailed p
Chi-square - Mantel-Haenszel	2.4612		0.1166915867
Chi-square - corrected (Yates)	1.8265		0.1765443637
P value		0.0879879933	

This table show that there is no significance between two methods of surgical operation of hernia, p value >0.05.

Discussion and Conclusion

Since Lichenstein and Shulman (8) published their paper “Ambulatory outpatient hernia surgery, including a new concept, introducing tension free repair” in 1986 and then in 1987 Lichenstein (17) published his findings on the simple yet effective method of using polypropylene mesh for the repair of 6321 inguinal hernias, surgeons all over the world have adopted the method and reproduced similar results. Kark et al (18), Gourgiotis et al (19) and Neumayer et al (20) showed the ease and flexibility which the tension free repair had to offer by their results. In our series of 50 patients, majority were over the age of (18) years, thus still active in their respective professions and early return to work

was of paramount importance to them. (90%) percent patients were manual workers and daily wage earners; hence ambulation was the immediate concern. The mesh technique does facilitate early ambulation and early return to work. Our series, 50 operations, were performed by consultants. Chan et al (22) in their study described similar findings, that trainee surgeons acquired the skills easily. We generally did not used drains, unless the hernia was significantly large. Superficial wound infection and seromas were seen in some cases which settled with regular dressings (see table 3 and table 4). For the infected cases oral antibiotics had to be given for one week. Interestingly, our data suggest that using mesh for surgical operation of hernia reduce the appearing of Wound infections after the operation, while the classical operation is related to appearing of the Wound infections after the operation. Furthermore, there are other researchers that worked in our field like of Choudry et al (23), Majeed and Mehmood (24) and Ahmad et al (25), although the latter used a Redivac suction drain and continued oral antibiotics after three doses of intravenous antibiotics. Najamulhaq and colleagues (26) reported a 3% wound infection in their series, without the use of prophylactic antibiotics. This certainly is very thought provoking and needs to be duplicated by others locally. Shulman and Lichenstein (21) in their follow-up study in 1995 showed that 72 European and American general surgeons with no special interest in hernia repairs, using their technique in 16,068 operations had a recurrence rate under 0.5, but our mesh methods reduce the recurrence of the disease, while the classical operation is related to recurrence of the disease (see table 1). Other authors like Kark et al (18) and Sakorafas et al (28) with large series (>500 cases) showed a recurrence rate of less than 1%. This should be the aim of our future authors. In conclusion The result of the present study concluded that using mesh for surgical operation of hernia is much better than the ordinal operation of hernia because this technique reduces the recurrence of the disease, while the classical operation is related to recurrence of the disease. Also Mesh can reduce the appearing of hematomas (see table 2), Wound infections after the operation, while the classical operation

is related to appearing of the hematomas and Wound infections after the operation. Further more there is no significant difference between the two methods regarding appearing of seromas after the operation however, its appear among those patients which did a classical operation more than those which using mesh for operation. So In our set-up Mesh Hernioplasty has proven to be effective with low complication and recurrence rates.

References

1. Dorairajan N. Inguinal Hernia-yesterday, today and tomorrow. *Indian J Surg* 2004; 66:137-139.
2. Lichenstein IL. *Hernia Repair without Disability*. St. Louis: The C.V. Mosby Company; 1970. p.1-8.
3. Bassini E. Sulla cura radicale dell Hernia Inguinale. *Arch Soc Ital Chir* 1887; 4: 380-388.
4. Shouldice EE. The treatment of the Hernia. *Ontario Med Rev* 1953; 1: 1-14.
5. Oonwala ZG. Inguinal Hernia Repair: Past & Present. *Pak J Surg* 2005; 21(2): 54-55.
6. Nyhus LM. The posterior (preperitoneal) approach and ilio-pubic tract repair of Inguinal and Femoral Hernias: An update. *Hernia* 2003; 7: 63-67.
7. DeBord JR. Prostheses in Hernia surgery: A century of evolution. In: Ben David R, Abrahamson J, Arregui MF, eds. *Abdominal wall Hernias*. New York: Springer; 2001. p.16-32.
8. Lichenstein IL, Shulman AG. Ambulatory outpatient Hernia surgery, including a new concept, introducing tension free repair. *Int Surg* 1986; 71: 1-7.
9. Stoppa RE. The midline preperitoneal approach and prosthetic repair of groin Hernias. In: Fitzgibbons RJ, Greenburg AG, eds. *Nyhus and Condon's Hernia*, 5th ed. Philadelphia: Lippincott, Williams & Wilkins; 2002. p.199-214.
10. Gilbert AI. Improved sutureless technique: Advice to experts. *Prob Gen Surg* 1995; 12: 117-9.

11. Fasih T, Mahapatra TK, Waddington RT. Early results of Inguinal Hernia repair by the 'mesh plug' technique - first 200 cases. *Ann R Coll Surg Engl* 2000 Nov; 82(6): 396-400.
12. Felix EL, Michas CA, McKnight RL. Laparoscopic herniorrhaphy transabdominal preperitoneal floor repair. *Surg Endosc* 1994; 8: 103-4.
13. Heithold DL, Ramshaw BJ, Mason EM, et al. 500 Total extraperitoneal approach Laparoscopic Herniorrhaphies: A single institution review. *Am Surg* 1997;63:299-301.
14. Sylopoulos N, Gazelle GS, Rattner DW. A cost utility analysis of treatment options for Inguinal Hernias in 1,513,000 adult patients: Randomized controlled studies. *Surg Endosc* 2003; 17: 180-9.
15. Desarda MP. Physiological repair of Inguinal Hernia: A new technique (study of 860 patients). *Hernia* 2006; 10(2): 143-144.
16. Nelson M, Stephenson BN. Adult groin Hernias: Acute and elective. *Surgery* 2006; 74: 239-245.
17. Lichtenstein IL. Herniorrhaphy: A personal experience with 6321 cases. *Am J Surg* 1987;153: 553-9.
18. Kark AE, Kurzer M, Waters KJ. Tension free mesh Hernia repair: Review of 1098 cases using local anaesthesia in a day unit. *Ann Roy Coll Surg Eng* 1995; 77: 299-304.
19. Gourgiotis S, Germanos S, Stratopoulos C, Moustafellos P, Panteli A, Hadjiyannakis E. Lichtenstein tension-free repair of Inguinal Hernia. *Chirurgia (Bucur)* 2006 Sep-Oct; 101(5): 509-12.
20. Neumayer L, Globbie-Hunder A, Jonasson O, et al. Open mesh repair of Inguinal Hernia. *N Engl J Med* 2004; 350: 1819-27.
21. Shulman AG, Amid PK, Lichtenstein IL. A survey of non-expert surgeons using the open tension-free mesh patch repair for primary Inguinal Hernias. *Int Surg* 1995 Jan-Mar; 80(1): 35-6.

22. Chan KY, Rohaizak M, Sukumar N, Shaharuddin S, Jasmi AY. Inguinal Hernia repair by surgical trainees at a Malaysian teaching hospital. *Asian J Surg* 2004 Oct; 27(4): 306-312.
23. Choudry ZA, Khan SA, Islam HR, Siddique T, Malik JI. Lichtenstien repair of Inguinal Hernia under local anesthesia - day case surgery. *Ann King Edward Med Coll* 2005; 11(4): 367-9.
24. Majeed S, Mehmood K. Repair of Inguinal Hernias with Lichtenstein technique. *Pak Armed Forces Med J* 2005; 55(2): 95-8.
25. Ahmad M, Qayum A, Afridi V. Tension free Hernioplasty is safe and effective. *Pak J Surg* 2005 Dec; 21(2): 76-80.
26. Najamulhaq R, Chaudhry IA, Khan BA, Afzal M. Groin sepsis following Lichtenstein Inguinal Hernioplasty without antibiotics prophylaxis: A review of 100 cases. *Pak J Med Sci* 2006; 22(4): 416-9.
27. Sakorafas GH, Halikias I, Nissotakis C, Kotsifopoulos N, Stavrou A, Antonopoulos C. Open tension free repair of Inguinal Hernias; The Lichtenstein technique. *Biomedical Central Surg* 2001; 1: 3.