ORIGINAL ARTICLE

Sutureless Sublay verses Onlay Mesh Hernioplsty in Incisional Hernia Repair: A comparative study at Teaching Hospital, Lahore

SIKANDAR HAYAT GONDAL, INAYAT HUSAIN ANJUM

ABSTRACT

A comparative study of 64 cases of incional hernia was carried out to compare the efficacy of subley sutureless hernioplsty vs onlay traditional hernioplsty technique,at surgical Unit-III of Lahore general hospital,Lahore from Jun.2010 to May 2011. The patients were divided in two groups, Group A and Group B. In Group A 32 patients in whom sutureless subley technique was adopted, were included, comprising 14 (43.75%) males and 18 (56.25%) females with mean age36.85±7.03 and 38.056.62± years in males and females respectively. Mean hospital stay remained 2.25±0.80 days. Hematoma formation was noted in 3(4.68%) cases. While wound infection was seen in 2(6.25%) patients whereas complications like sinus formation and mesh rejection or recurrence were not observed. In group B 32 patients were included with 9 (28%)males and 23 (72%) females having a mean ages of 50.11±15.04 and 39.69±11.48 years respectively. Hospital stay was noted to be 3.96±1.92 days, with hematoma formation in 9 (14.06%) and wound infection in 4 (12.25%)patients. Sinus formation was recorded in 3 (3.47%) patients in this group while none of the patient suffered from mesh rejection or recurrence. It was concluded that sutreless sublay technique in incisional hernioplasty is superior as compare to traditional onlay mesh

Key words: *Sutureless sublay mesh repair; Onlay mesh repair; hematoma formation ,wound infection, sinus formation, mesh rejection and recurrence*

INTRODUCTION

It was Usher et al. in 1958, who introduced high density mesh for hernia repair 4 with onlay mesh hernioplasty technique and claimed valuable success as for as the recurrence was concerned. In 1970, French surgeons Stoppa and Rives, for the first time placed mesh in sublay position without suturing the mesh at the edges of the defect. Since then surgeons of the whole world are confronting to solve the hard question of incisional hernia repair with acceptable results. Because the recurrence rates ranging from 3.81% to 15%, according to national and international studies are posing a continuous threat to the surgical teams particularly in this part of the world where social, geopolitical and economical cultures are always at stake. The purpose of this study was to compare the results of both the techniques with the variables like hospital stay, hematoma formation, wound infection, sinus formation, mesh rejection and recurrence.

METHODS AND MATERIALS

This study was carried out at Surgical Unit-III of Lahore general hospital, Lahore from June 2010 to May 2011. All the patients, with diagnosis of incisional hernia, fulfilling the inclusion and exclusion criteria, admitted from the out patient department, were included in the study. They were randomly divided into group A (sutureless Sublay) and group B (onlay). After taking detailed history, performing clinical examination and required investigations, informed written consent was taken and the patients were submitted for surgery on elective list. The operative notes, postoperative hospital stay and complications were entered into the proforma. Follow up was done in the out patients department for six months. The results were analyzed by the SPSS version 10.

Department of Surgery, Lahore General Hospital/Postgraduate Medical Institute, Lahore
Correspondence to Dr. Inayat Husain Anjum Email: drinayatanjum@hotmail.com

RESULTS

Among the 64 patients enrolled in the study, the mean hospital stay was 2.25±0.80 days in group-A and in group B it was 3.96±1.92 days. Difference between the mean hospital stay was statistically less in group A as compare to that of group B, i.e. (p-value=0.000). Hematoma was seen in 3(4.69%) patients of group A and 9(14.06%) patients of group B. Development of hematoma was statistically insignificant in both study groups i.e. (p-value=0.230) at first follow-up. At 2nd visit, only 3 patients of groups B had hematoma with insignificant statistical difference as compare to group A, i.e., (p-value=0.076). At 3rd and 4th visits, there none of the patients developed hematoma in either study group.

There were 2 (6.25%) cases who had wound infection in group A, and 4 (12.5%) patients in group B. Frequency of wound infection was higher in group B as compared to that of group A, that is statistically significant i.e. (p-value=0.019).

During follow up, at 1st visit wound infection was seen in 2 (6.25%) of Group-A while in 3 (9.37%) patients of Group-B, The frequency of wound infection was insignificant i.e. (p-value=0.641) in both study groups. 0n 2nd visit, in group A, the frequency of wound infection remained nil while in that of in group B, it was noted as 12.5%(n=4). Which was statistically significant. i.e. (p-value=0.001). At 3rd visit, there were 4(12.5%) patients who developed wound infection in group B and none of the patients had wound infection in group A. The wound infection at 3rd visit was statistically significant in group B i.e. (p-value=0.003). At 4th visit none of the patient had wound infection in both study groups. No patient suffered from sinus formation in Group-A (Sublay group) while 3(3.49%) cases in group B developed sinus formation, the difference was statistically insignificant i.e. (p-value=0.076). According to this study mesh rejection and recurrence was not seen in any patient during the six months follow up.

Table 1: descriptive statistics and comparison of age (years) and hospital stay (days)

	Group A	**Group B**	**Overall**
Age	37.53 ±6.72	42.62 13.21	40.07±10.71
Hospital stay	2.25 ± 0.80	3.96 ± 1.92	3.10

Table – 2: Frequency table of postop complication

Complications	**Group-A (n=32)**	**Group-B (n=32)**	**p-value**
Hematoma	3 (4.69%)	9 (14.06%)	0.027
Wound infection	2 (6.25%)	4 (12.5%)	0.019
Sinus Formation	0 (0%)	3 (4.69%)	0.076
Mesh rejection	0 (0%)	0 (0%)	--
Recurrence	0 (0%)	0 (0%)	--
Haematoma			
1st Visit	2 (6.25%)	5 (15.62%)	0.230
2nd Visit	0 (0%)	3 (9.37%)	0.076
3rd Visit	0 (0%)	0 (0%)	-
4th Visit	0 (0%)	0 (0%)	-
Wound infection			
1st Visit	2 (6.25%)	3 (9.37%)	0.641
2nd Visit	0 (0%)	4 (12.5%)	0.001
3rd Visit	0 (0%)	3 (9.37%)	0.003
4th Visit	0 (0%)	0 (0%)	-
Sinus information			
1st Visit	0 (0%)	0 (0%)	--
2nd Visit	0 (0%)	0 (0%)	--
3rd Visit	0 (0%)	3 (9.37%)	0.076
4th Visit	0 (0%)	3 (9.37%)	0.076

DISCUSSION

Incisional hernia is a protrusion of a portion of organ or tissue through an old abdominal incision, produced primarily by poor wound healing and faulty surgical techniques. Additionally, poor nutritional status, smoking, infection, pulmonary disease, steroid usage, malignancy, and morbid obesity can potentiate the weakening of such an incision. Incisional hernias have an unacceptable recurrence rates upto 30-40% when tissue repair alone is performed.This much recurrence rate is thought to be associated with increased tissue tension, resulting into tissue ischemia and consequently generation of weaker scar(Robert, 2003; Burger, 2004; Korenkov, 2001). But the recurrence rate will be decreased (0-10%) if tension free prosthetic repair is employed for the repair of the defect. In 1962, FC Usher, presented a study of 547 cases of hernia repair by using prosthetic material in which polypropylene Mesh was placed in onlay position with significant encouraging results as for as recurrence rate was concerned. About 13 years later, Rene Stoppa in 1975 described his six years experience of Dacron mesh application and it was he, who floated the idea of sublay technique for prosthesis placement. Since 1975 to 2010, the surgeons from the whole of the globe have been extensively engaged to find out the best type of prosthesis and its best site of placement as a number of workers worldwide are of the opinion that sublay technique is superior, when compared with traditional onlay repair. (Khaira, 2001, Langer 2003; Hamilton 2005, Martin, 2008, Mehmat, 2010). But an other group do not agree with this statement and strongly argue that traditional onlay mesh hernioplasty technique is still the gold standard. (Shukla, 2005; Rajesh 2006; Zarin 2008). The purpose of our study was to compare the results of sutureless sublay verses onlay mesh hernioplasty in incisional hernia in our setup according to the variables described like hospital stay, hematoma formation, wound infection, sinus formation, mesh rejection and recurrence.

In our study, over all hospital stay was 1-8 days (mean 3.10±1.70 days). The hospital stay was significantly less in sutureless sublay group (2.25±0.80days) as compared to that of Onlay mesh hernioplasty (3.96±1.92days). Jung-Sheng et al, in 2011 in Taiwan, noted mean hospital stay of 4.7±1.7 days in a study of 20 cases of incisional hernia repair by onlay technique. Memon et al, in 2009, noted 2-4 days hospital stay in 200 cases of incisional hernia repair by sublay technique. R Godara et al, in 2006, observed 6.8±1.5days in sublay group as compared to 4.6±1.3 days in onlay method of incisional heria

repair in 100 cases. Most of the patients were discharged on the 2nd post operative day in our study. According to a study, conducted by Kingsnorth in 2004, hospital stay was between 6 and 50 days. This long hospital stay was probably due to infective complications and their management (Kingsnorth, 2004).

Hematoma is a pocket or localized collection of blood usually in liquid form within the tissue. These collections, haematomas or seromas, should not be mistaken for recurrence of the hernia which may often present similarly. These fluid collections resulted from both the porous property of the mesh, the discharge in the potential space created during surgical manipulation or from the puncture of the blood vessels, if meticulous hemostasis is not achieved. Generally none of these patients require drainage since such collections usually disappear spontaneously (Wedro 2011). In this study, a significantly higher rate of hematoma formation was noted in onlay mesh group 9(14.06%) cases as compared to 3(4.69%) patients in sublay group (P-value=0.027). Most of these patients were managed conservatively and only 2 demanded incision and drainage in onlay group. A low rate of 1.73% has also been reported by Majid et al, in 2011 in his study of 321 cases in which he repaired 288 patients with defects less than 6cm, at Sheikh Zayed Hospital, Lahore with onlay hernioplasty technique. This apparently low rate of hematoma formation signifies strict selection of cases as for as the size of hernia was concerned (Majid 2011). In another study, Memon et al, in 2009, depicted a value of 4.2% at Ghulam Mohammad Mehar Medical College/Hospital, Sukkar, in patients managed with sutureless sublay method of incisional hernia repair (Memon 2009). Peter Nau et al, in 2009 in America, observed 4.7% hematoma formation in his study of 64 cases of incisional hernia repair with sublay technique. These resuls are very well compaireable to our study. Wound infection is invasion by and multiplication of pathogenic microorganisms at wound site which may produce subsequent tissue injury and progress to overt disease through a variety of cellular or toxic mechanisms. In mesh hernioplasty, it is a terrifying complication, which sometimes can be severe enough to necessitate removal of mesh (Kingsnorth, 2006) but fortunately superficial, relatively minor wound infections are more commonly observed as people like Pillay et al, in 2007 and Zarin et al, in 2008, reported a figure of 10% and 14% in their studies respectively. While most of the local studies recorded a comparatively lower value ranging from 5-10% (Waqar, 2005; Javid, 2006; Memon, 2009). According to our study, an overall wound infection rate seems to be rather towards a higher side i e., 15.63%. Which is not apparently comparable to the studies mentioned by most of the national and international workers because all the workers depicted the wound infection rates either in sublay or onlay mesh hernioplasty groups separately. Similarly when noted individually in our study the wound infection rates of 6.25% in Group A and 12.5% in Group B, are very justifiable when compared to studies of national and international fame. These infections were of superficial subcutaneous nature and were managed by taking swabs for culture and sensitivity followed by simple dressings and antibiotics therapy. In this study, the deep infection around the mesh has not been observed.

Sinus is a track leading to cavity which may be filled with pus. Persistent infection or foreign body results in sinus formation. During the course of follow up, the sinus formation was observed in 3(4.69%) patients from onlay mesh group as compared to none from suture less sublay group (p value=0.076). These patients were treated by simple debridement and one patient required excision of the track. In a local research, Hameed et al, in 2009, noted 0% sinus formation with better results in patients managed with sublay mesh repair (Hameed 2009). In an international study, Molly in 1991 reported a sinus formation rate of 12%. (Molloy 1991) but his observations are inconclusive weather this sinus formation was in sublay or onlay mesh hernioplasty. Peter Nau et al in 2009 noted 0% sinus formation in his study of 64 cases of hernia repair by sublay technique. Our results are same as for as the sinus formation is concerned in the management of incisional hernia.

No mesh rejection or recurrence was noticed during the follow up of the cases in both groups. However higher postoperative infection rate, more cases of sinus formation and longer hospital stay was observed in group B (onlay) as compared to group A (Sutureless Sublay), signifies that sutureless sublay method of hernioplasty is superior, safe and economical in our setup.

CONCLUSION

Suturless sublay mesh hernioplasty is better and safe technique than that of onlay mesh hernioplasty in incisional hernia repair.

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