

A COMPARATIVE STUDY ON ANATOMICAL VS MESH REPAIR FOR INCISIONAL HERNIA

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Abstract: Incisional hernias are a very common problem encountered by a surgeon and has followed abdominal surgery like a shadow for more than a century now. Incisional hernia is a truly iatrogenic hernia. In this prospective study, all patients (50 cases) presenting to the OPD of general surgery in GMC Guntur over a two year period, have been selected ensuring there was no obstructed or strangulated incisional hernias/intra-abdominal malignancies/ patients with severe co-morbid conditions (severe cardio-pulmonary disease, un controlled ascites)/ pregnant women with incisional hernias/ recurrent incisional hernias. The aim was to evaluate the outcome of anatomical and mesh repair of incisional hernia with reference to technical difficulty, convalescence, wound infection and recurrence. A majority of patients were in the age group of 31-40 years and was more common in females than males with a female to male ratio 7.2: 2.8 It was found that 36% of patients had an onset of symptoms within one year of previous surgery, whereas, 22% of patients had an onset between 1-5 years, 14% had onset between 5-10 years and 28% after 10 years. Meanwhile, 88% of patients had hernial defect size of less than 5 cm in diameter, 8% had a defect size in between 5-10 cm, however, and only 4% had a defect size of more than 10 cm in diameter. The study had found 3 patients in the anatomical repair group and 11 patients in the mesh group had developed post operative complications; most common of which were: 1. Wound infection in the anatomical repair group (8%). 2. Seroma was seen in the mesh group (24%). 3. All the 25 cases in each group were followed up for a period of 1 year and no recurrence was noted.

Keywords: Incisional hernia, iatrogenic, abdominal malignancies, Mesh Repair

INTRODUCTION:

Incisional hernia is a very common problem encountered by surgeon ⁽¹⁾ and has followed abdominal surgery like a shadow for more than a century now ⁽⁸⁾. Incisional hernia is a truly iatrogenic hernia⁽⁹⁾, also termed eventration, laparocoele or postoperative hernia, is the protrusion of abdominal contents through orifices or areas of the abdominal wall weakened by traumas or surgical incisions ⁽¹⁰⁾. Ian Airde defines incisional hernia as a diffuse extension of peritoneum and abdominal contents through a weak scar of an operation or accidental wounds ⁽⁸⁾. The exact incidence of incisional hernia has not been well defined, although a number of reports in the literature suggested the probability of incidence between 2-11% following all abdominal surgeries ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾⁽⁶⁾⁽⁷⁾.

No incision in the abdomen is immune to the development of incisional hernia, as incisional hernias of the perineum and coccyx have been reported ⁽⁵⁾. The incidence of incisional hernia has increased with each increment of abdominal surgical intervention. It is the most perfect example of a

`surgeon dependent variable". The recent introduction of continuous ambulatory peritoneal dialysis has been followed by its own unique harvest of incisional hernias. Laparoscopic surgery has also added anew entity: `portsite hernia"although infrequent with advent of smaller ports and the currently available instrumentation ⁽⁹⁾.

Many factors singly (or) in various combinations may cause failure of the wound to heal satisfactorily and may lead to the development of incisional hernia. These include age, sex, obesity, chest infections, type of suture material used, smoking, surgeon`s experience, closure method, site of incision, sepsis, primary wound healing defects, malnutrition, Diabetes Mellitus, post operative abdominal distension, immune-compromised state (renal failure, steroid use, diabetes), pregnancy, multiple prior procedures, prior incisional hernias, malignancy etc. All these presenting a challenging problem to the surgeon.⁽⁹⁾⁽⁶⁾⁽¹¹⁾⁽⁸⁾

Jack Abrahamson a pioneer in hernia surgery in the modern era said, many factors singly or in various combinations may cause failure of the wound to heal satisfactorily and lead to development of incisional hernia, main causes being poor surgical techniques and sepsis ⁽¹²⁾. The incisional hernia usually starts early after surgery, as a result of defective closure following laparotomies ⁽⁸⁾⁽⁴⁾. They occur at the defective healing sites within the approximated incision or at the suture puncture sites created during the closure or both ⁽¹³⁾.

They show great variations in the degree of herniation and may occur through a small portion of the scar. Incisional hernias if left unattended can cause serious morbidity⁽⁵⁾⁽¹²⁾⁽¹⁴⁾⁽⁸⁾which include irreducibility, partial / severe obstruction, incarceration (6-15%), strangulation (2%), spontaneous ulceration of the skin, as well as rupture. The hernias especially through a lower abdominal scar usually increases steadily in size and more and more of its contents become irreducible. Patients who develop these hernias have an unusually high number of co morbidities (or) risk factors prone to abdominal wound dehiscence. Patients who develop these hernias become restricted from work as the hernias enlarge. Hernias are also responsible for considerable economic loss to the patient and the family. It is therefore, important to perform the type of operation, which will offer the best chance for a permanent cure with minimal risk.

Aim of the study: To evaluate the outcome of anatomical and mesh repair of incisional hernia with reference to technical difficulty, convalescence, wound infection and recurrence.

Methodology: This is a prospective study done in 50 patients who got admitted for the treatment of incisional hernia during two years period in our college. All patients of primary incisional hernia with previous history of laparotomy are selected at random ensuring there was no obstructed or strangulated incisional hernias/intra-abdominal malignancies/ patients with severe co-morbid conditions (severe cardio-pulmonary disease, un controlled ascites)/ pregnant women with incisional hernias/ recurrent incisional hernias

Clinical history is taken regarding duration of hernia, progression in size, associated complaints like pain in the swelling or abdomen, vomiting, reducibility, chronic cough, constipation, difficulty in micturition, abdominal distention, history suggestive of ascites and other causes of abdominal distention, number of pregnancies. History regarding previous surgery with respect to nature of operation, duration, type of incision, type of closure, post-op complications, is enquired. In local examination special attention was given to the position, size, shape, composition, cough impulse, reducibility, and skin over the swelling, and size of the defect and tone of the muscles, position of the previously operated scar. In routine general physical examination-attention was given to obesity,

diabetes, hypertension, anemia, hypoproteinemia, jaundice, tone of the abdominal muscles, in finding cause of abdominal distension, per-rectal examination to look for mass in the rectum (malignant), benign prostatic enlargement, examination to look for external meatal stenosis and stricture urethra in males. Respiratory system examination was done to look for rhonchi, crepitations suggestive of COPD.

All cases were clinically diagnosed and all patients included in the study underwent surgery following routine pre-operative investigations. No other special investigations were required for any of the patients except patients who underwent ultrasound examination of the abdomen and pelvis to know the underlying unknown pathology and to know the size of the defect, number of defect and content of sac. Cases were prepared for surgery after preoperative correction of anemia, hypertension, diabetes, obesity (not in all patients) and local skin conditions. They were subjected either to anatomical repair or mesh repair by the affordability of the patient to buy polypropylene mesh. All patients underwent surgical procedure after routine preoperative preparations. Informed written consent was obtained after explaining the surgical procedure, its results, risk factors and complications.

Patients were treated with IV fluids, broad spectrum antibiotics covering both aerobic and anaerobic organisms for 5 days along with proton pump inhibitors and adequate analgesics. Patients were allowed orals after 24-36 hrs and liquids as tolerated. Quantity and nature of the suction drain noted and Drain removed when the bowel sounds were present, after patients moved bowel and the draining fluid has become nil or less than 20ml. Operative wound inspected on 4th post-operative day. During wound inspection special attention was given to signs of inflammation and discharge from the wound. If swelling was present which was soft in consistency (at the wound site), contents were aspirated with 18G needle and nature of collection noted. If it was serous or bloody, aspiration completed with the same needle. If it was purulent, collection was let out by removing one or two stitches and pus was sent for culture and sensitivity. If the wound is healthy, alternate sutures were removed after about 8-10 days and remaining sutures were removed one day later. After complete wound healing patient was advised to come for review once a month for at least 3 months and subsequently after 3 and 6 months thereafter. Also, on discharge patients were advised to stop smoking (if smoker), to reduce weight (if obese) not to lift heavy weights for atleast 3 months, light work and abstinence from sexual activity for at least 1 month. During follow up patient was examined for fresh symptoms and signs pertaining to recurrence and surgical procedure. Details regarding duration of hospital stay following surgery, postoperative wound complications and recurrence were recorded.

RESULTS:

50 consecutive cases of incisional hernia were included in the study after taking consent. They were subjected either to anatomical repair or mesh repair (25 in each group).

AGE IN YEARS	NO.OF CASES	%
21-30	5	10
31-40	17	34
41-50	14	28
51-60	13	26
61-70	1	2

SEX	NO.OF CASES	%
Male	14	28
Female	36	72

TABLE NO 1: AGE DISTRIBUTION OF INCISIONAL HERNIA

TABLE NO 2: SEX DISTRIBUTION OF INCISIONAL HERNIA

PRESENTATION	NO.OF CASES	%
SWELLING	33	66
PAIN	1	2
Both	16	32

Position of the swelling	No. of cases	%
Supra-umbilical	13	26
Infra-umbilical	37	74

TABLE NO 3 CLINICAL PRESENTATION OF CASES.

TABLE NO 4 DISTRIBUTION OF SWELLING IN THE ABDOMEN

Time of onset	No. of cases	%
Upto1year	18	36
>1year-5years	11	22
>5years-10years	7	14
>10 years	14	28

TABLE NO 5: TIME OF ONSET OF INCISIONAL HERNIA AFTER PREVIOUS OPERATION

In our study the majority of patients were in the age group of 31-40 years. The youngest patient was 25 yrs old and the oldest was 65yrs. Incisional hernia was more common in females than males with female to male ratio 7.2: 2.8. In our study most common symptom that patient presented with was swelling in the abdomen, accounting for 66% of the cases. 32% of patients had pain as the presenting complaint and 2% presented with both swelling as well as pain in the abdomen

In our study 74% of patients presented with infra umbilical swelling and 26% presented with supra umbilical swelling. It was found that 36% of patients had an onset of symptoms within one year of previous surgery. 22% of patients had onset between 1-5 years, 14% had onset between 5-10 years and 28% after 10 years. Totally 58% patients presented within 5 years of previous surgery and 42% presented after 5 years of surgery.

In our study 54% of incisional hernias occurred below the umbilicus in the midline. LSCS was the most common operation followed by tubeectomy. Out of all the cases 14 patients had undergone emergency operation including appendicectomies, caesarean sections and laparotomies for acute intra-abdominal conditions. Tone of the abdominal muscle was poor in 7 patients and in 43 patients' tone was good. Tone of the abdominal muscle was examined clinically by head and leg raising test, by the presence/absence of malgaigne's bulges and also per operatively by examining the bulk of the muscle.

In our study 88% of patients had hernia defect size of less than 5cm in diameter. Another 8% had defect of 5-10 cm in diameter. Remaining 4% had the defect size of more than10cm in diameter. Duration of surgery varied with each case, average time taken for surgery in anatomical group was 63.8min and

mesh group is 73.8 min. This difference was statistically not significant ($p>0.05$). No technical difficulty was encountered in both the groups. The contents of the sac were either small intestine or omentum or both. In one case Mesentry and one case transverse colon was found.

Adhesions were released and simple reposition of the contents into the abdominal cavity was done. In cases of adhered omentum which was devitalized after releasing had to be excised partly after ligation. Vicryl suture no. 2-0 with round body needle was used to close the peritoneum, approximation of muscle tissue. Polypropylene mesh of appropriate size selected depending on the size of the defect (in case of mesh repair). Prolene suture no.1-0 with round body needle was used to fix the mesh to anterior abdominal wall (mesh group). Prolene no.1 with round body needle was used to close the rectus sheath. Closed suction drain tubes with continuous suction one over the mesh (in mesh group) and in the subcutaneous plane, were used in all the cases.

In our study 3 patients in anatomical repair group and 11 patients in mesh group had post operative complications. This difference is statistically not significant ($p>0.05$).

Most common complication in anatomical repair group was wound infection, occurred in 8% cases and in mesh group was seroma which occurred in 24% cases. In the present study, average convalescence period in anatomical repair group was 9.76 days and in mesh group was 14.96. This difference was statistically not significant ($p>0.05$). Also, majority of patients in anatomical group (72%) had convalescence period of less than 10 days and in mesh group (60%) are between 11-20 days.

All the 25 cases in each group were followed up for a period of 1 year and no recurrence was noted.

Discussion:

In this clinical study, 50 consecutive patients with incisional hernia admitted and treated with anatomical repair and mesh repair during the period of two years. The patients were studied the outcome of anatomical and mesh repair of incisional hernia with reference to technical difficulty during surgery, various complications during post operative period, period of convalescence and recurrence.

This study may not reflect all the aspects of incisional hernia, as the series is small and follow up period is short. This is considered limitations for my study. Our patients want their postoperative period uncomplicated and short so as to return to normal daily activities. Similarly, surgeons want techniques with short learning curves and their recurrence rates comparable with specialist centers. No technical difficulty was experienced.

Among 25 patients who underwent anatomical repair, postoperative complications were observed in 3 patients, out of which 1 patient had seroma and 2 patients had superficial wound infection. Whereas in 25 patients who underwent mesh repair, post operative complications were observed in 11 patients, out of which 6 patients developed seroma and 5 patients had superficial wound infection and none of the patient required mesh removal.

The followup was advised in all patients, once a month for atleast 3 months and subsequently after 3 and 6 months thereafter. All 50 patients were followed up for a minimum period of one year. In the present study there was no recurrence. In a similar study conducted by Lujendijk et al, burger et al and korenkov et al, recurrence rates are 43 %, 63% and 12.12% respectively in anatomical group and 24%, 32% and 7.69% respectively in mesh group.

The followup period in our study was short. Longer followup was needed to know the true recurrence rate. In the present study, post operative complications were observed in 3 and 11 patients in anatomical and mesh group respectively, out of which 1(4%) and 6 (24%) patients had seroma in each group respectively and 2(8%) and 5 (20%) patients had superficial wound infection in anatomical and

mesh groups respectively. In similar studies conducted by Luijendijk et al in anatomical repair 3.09% patients had seroma and 1.03% patients had superficial wound infection. But in mesh repair 4.76% patients had seroma, 4% had superficial wound infection, 1.19% developed intestinal obstruction and 1.19% had bowel adhesions. Burger et al reported 4.54% patients having intestinal obstruction after anatomical repair and whereas in mesh repair reported superficial wound infection in 1.66% patients, intestinal obstruction in 11.66% patients and intestinal fistula development in 3.33% cases.

Korenkov et al in another study reported only seroma formation in 3.03% patients in anatomical repair and where as after mesh repair reported seroma formation in 7.69% cases and superficial wound infection in 10.25% cases.

Conclusion:

The present study aimed at evaluating technique of anatomical and mesh repair of incisional hernia with reference to technical difficulty, convalescence, wound infection and recurrence. Based on the evidences from the present and previous studies, the anatomical repair is superior in terms of occurrence of wound infections and other post operative complications with an average duration of one hour to perform the surgery with shorter period of convalescence. Whereas mesh repair is superior in terms of recurrence as is evidenced by the previous studies, but the present study was insufficient to know the true recurrence rate due to the shorter period of follow up. Thus, we conclude that anatomical repair in most of the patients can be done without compromising the outcome in the patients who cannot afford mesh and without any underlying factors like obesity, very large and multiple defects and recurrent cases which obviates the need for mesh repair.

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