A comparative study of composite mesh versus prolene mesh in intraperitoneal onlay repair for ventral hernia

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ABSTRACT

Background: Incisional hernia is the most common complication of laparotomy that requires reoperation. The present study was conducted to compare composite versus prolene mesh in intraperitonealonlay repair for ventral hernia.

Materials & Methods:50 patients of ventral hernia of both genders were divided into 2 groups. In group I, patients underwent intraperitonealonlay mesh repair for ventral hernia using composite mesh and in group II, patients underwent intraperitonealonlay mesh repair for ventral hernia using prolene mesh. Time taken for surgery was measured. Post op pain was assessed by visual analogue scale. Post op complications like hematoma, seroma, bleeding, and suture site infection etc. was recorded.

Results: Group I had 15 males and 10 females and group II had 13 males and 12 females. The duration of surgery was 131.2 minutes in group I and 124.2 minutes in group II, hospital stay was 5.7 days in group I and 6.5 days in group II and post- operative pain was 4.8 in group I and 5.3 in group II. The difference was significant ($P< 0.05$). Complications were suture site infection in 1 in group I and 2 in group II, seroma 2 in group I and 1 in group II, hematoma 1 in group I and 4 in group II and bleeding 3 in group I and 5 in group II. The difference was significant ($P< 0.05$).

Conclusion: The onlay mesh repair for ventral hernia using the composite mesh was found to be superior to the prolene mesh.

Key words: Incisional hernia, bleeding, prolene mesh, compositemesh

Introduction

Incisional hernia is the most common complication of laparotomy that requires reoperation. Recent figures cite an overall incidence of nearly 10%.[1] Considering that two million laparotomies are performed annually in the United States, there will be an estimated 200,000

patients requiring incisional hernia repair each year. For stoma site hernias, the incidence of hernia formation may be as high as 30% and, when surgical site infections occur, the incidence is believed to double. The costs of incisional hernia repair surgeries are staggering.[2]

Techniques of mesh placement include on-lay, in-lay and sandwich. In the on-lay technique, the mesh is placed over the external oblique fascia. In the in-lay technique, the mesh is placed either intraperitoneally or in preperitoneal plane. In the sandwich technique, one mesh is placed on-lay and one is placed in-lay.[3] Laparoscopic methods are also very popular now and use a mesh placed intraperitoneally. A few surgeons do laparoscopic repair by raising a flap of the peritoneum, placing the mesh and closing the peritoneum over the mesh, i.e. separate the mesh and viscera by the peritoneum. Spreading or even stitching/tacking omentum to the mesh to separate it from the viscera is also advocated.[4] However, these techniques may not be always possible as the adequate peritoneum/omentum may not be always available, especially in recurrent hernia cases, because of scarring. Many rents may appear in the peritoneum during dissection.[5]The present study was conducted to compare composite versus prolene mesh in intraperitonealonlay repair for ventral hernia.

Materials & Methods

The present consisted of 50 patients of ventral hernia of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. In group I, patients underwent intraperitonealonlay mesh repair for ventral hernia using composite mesh and in group II, patients underwent intraperitonealonlay mesh repair for ventral hernia using prolene mesh. Time taken for surgery was measured. Post op pain was assessed by visual analogue scale. Post op complications like hematoma, seroma, bleeding, and suture site infection etc. was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of patients

Groups	Group I (25)	Group II (25)
Method	Composite mesh	Prolene mesh
M:F	15:10	13:12

Table I shows that group I had 15 males and 10 females and group II had 13 males and 12 females.

Table II Assessment of parameters

Parameters	Group I	Group II	P value
Duration of surgery (mins)	131.2	124.2	0.05
Hospital stay (days)	5.7	6.5	0.02
Post- operative pain (VAS)	4.8	5.3	0.01

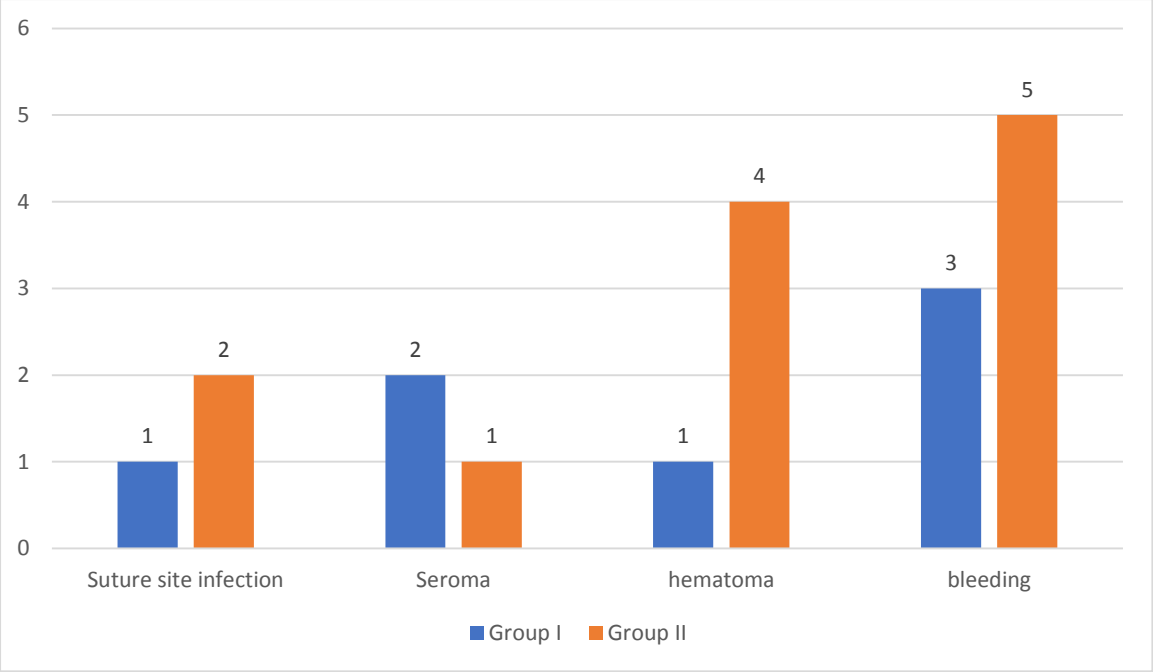
Table IIshows that duration of surgery was 131.2 minutes in group I and 124.2 minutes in group II, hospital stay was 5.7 days in group I and 6.5 days in group II and post- operative pain was 4.8 in group I and 5.3 in group II. The difference was significant (P< 0.05).

Table III Comparison of complications

Complications	Group I	Group II	P value
Suture site infection	1	2	0.05
Seroma	2	1	0.05
hematoma	1	4	0.01
bleeding	3	5	0.04

Table III, graph I shows that complications were suture site infection in 1 in group I and 2 in group II, seroma 2 in group I and 1 in group II, hematoma 1 in group I and 4 in group II and bleeding 3 in group I and 5 in group II. The difference was significant (P< 0.05).

Graph IComparison of complications



Discussion

Hernia is the protrusion of a viscus via a normal or pathological weakening in the wall of the cavity that it is contained in.[6] Ventral hernias are the second most common form of hernia encountered. A ventral hernia is a tissue protrusion caused by a weakening in your abdominal wall. It can happen anywhere in your abdomen.[7] A Ventral Hernia is a protrusion of an abdominal viscus or a portion of an abdominal viscus through the front abdominal wall that occurs anywhere other than the groyne.[8] Incisional hernias, paraumbilical hernias, umbilical hernias, epigastric hernias, and spigelian hernias are all examples of hernias. Many of them are called incisional hernias because it form at the healed region of previous surgical incisions. Here abdominal wall have become weak which allows abdominal cavity contents to push out.[9]In strangulated ventral hernia, intestinal tissue gets caught within an opening in abdominal wall. This part cannot be pushed back into abdominal cavity and its blood flow is

stopped. This type of ventral hernia requires emergency intervention.[10]The present study was conducted to compare composite versus prolene mesh in intraperitonealonlay repair for ventral hernia.

We found that group I had 15 males and 10 females and group II had 13 males and 12 females. Wilson et al[11]compared the outcomes of composite mesh and prolene mesh usage in intraperitonealonlay mesh repair for ventral hernia. 30 patients were included with group A as 15 patients who underwent intraperitonealonlay mesh repair for ventral hernia using composite mesh and group B as 15 patients who underwent intraperitonealonlay mesh repair for ventral hernia using prolene mesh. The mean age of patients was 45.66±11.28years of age, with minimum age of 30years and maximum of 67years. Among them female preponderance was seen in study, with 76.7% were females and 23.3% were male patients. Duration of surgery in group A was 130±8.52minutes and group B was 121.6±7.58minutes.

We observed that duration of surgery was 131.2 minutes in group I and 124.2 minutes in group II, hospital stay was 5.7 days in group I and 6.5 days in group II and post- operative pain was 4.8 in group I and 5.3 in group II. Alkhoury et al[12] reported results of laparoscopic VHR are comparable in the PPM and newer mesh, but PPM at a significantly lesser cost. Their study included 141 patients who had undergone laparoscopic VHR with PPM, of which 123 patients were available for follow-up. The median follow-up period was 40 months. Partial transient small bowel obstruction occurred in 2.4 % of patients, which settled with conservative management and did not require surgery. Wound infection occurred in 3.2 % patients, port site hernia in 1.6 %, seroma in 0.7 % and recurrence in 4.8 % of patients.

We found that complications were suture site infection in 1 in group I and 2 in group II, seroma 2 in group I and 1 in group II, hematoma 1 in group I and 4 in group II and bleeding 3 in group I and 5 in group II. Vrijland et al[13] studied 136 patients where intraperitoneal PPM was placed. The median follow-up was 34 months. They found 6 % wound infection and sinus formation in only 2 (1.5%) patients. There were no cases of fistulization. None of them needed mesh removal. There was no case of persistent infection; all cases settled with antibiotics. They concluded entero cutaneous fistula is very rare, regardless of omental coverage or peritoneal closure.

Ginty et al[14] conducted experiments in eight pigs by placing three types of meshes and compared adhesion formation and fibrous ingrowth at 28 days. They found adhesions and adhesion peel strength are least with the PCO (polyester with antiadhesive collagen layer) mesh, less with PTFE compared to PPM. PCO facilitates fibrous ingrowth better.

The limitation the study is small sample size.

Conclusion

Authors found that the onlay mesh repair for ventral hernia using the composite mesh was found to be superior to the prolene mesh.

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