

Comparative Evaluation Of "Sublay" Versus "Onlay" Meshplasty In Ventral Hernias

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Abstract

Background: Ventral hernia is due to a biological problem of stable scar tissue formation, mesh techniques today are the methods of choice for hernia repair. Ideal site of mesh placement is still debated.

Methods: 100 cases of ventral hernia with defect size ≤ 4 inches were alternatively placed in onlay and inlay group.

Observations were made with regards to duration and ease of operation, wound complications, hospital stay, activity and recurrence.

Results: The mean total time for surgery in sublay group was 63.15 ± 15.0 minutes compared to 49.35 ± 8.29 minutes in onlay group ($p < 0.001$). The mean hospital stay in sublay was 6.8 ± 1.50 days whereas it was 4.6 ± 1.30 in onlay group ($P < 0.001$).

There was no recurrence in either of groups in two years follow up.

Conclusion: Onlay placement of mesh is effective, quick and easy technique as compared to sublay placement.

INTRODUCTION

Ventral hernias are commonly encountered in surgical practice. The estimated incidence of ventral hernia is 15-20%. Despite the frequency of surgical repair "Perfect results" continue to elude surgeons and the rate of surgical failure is humbling (10 – 30%)₁. True recurrence rate are probably underestimated. For the foreseeable future, hernia surgery is a procedure likely to be delegated to non consultant staff and trainee surgeons. Recurrence, the ultimate nightmare of a hernia surgeon adds significantly to health care costs and poses a further economic burden. Confronted with the fact that onset of an ventral hernia is due to a biological problem of stable scar tissue formation, the mesh techniques today are the methods of choice for hernia repair. To avoid recurrences, a variety of materials were tried to reinforce the repair via facial autografts, prosthetic material, metallic mesh. The techniques of placements include onlay, inlay, sublay sandwich, finger interdigitation etc., but the best position for inserting the material has not been conclusively established till date as per literature₂. Although polypropylene mesh has long been regarded as the implant of choice for repairing abdominal wall defects, there is still controversy regarding the best site of its placement. A prospective study was conducted to compare 'sublay' versus 'onlay' meshplasty in influencing the final outcome in ventral hernia with regards to ease of

operation, duration of surgery, postoperative complications and recurrences, if any.

MATERIAL & METHODS

The prospective study was carried out in 100 patients of ventral hernia (excluding very large incisional hernia with defect more than 4 inches) admitted in department of Surgery. All patients were grouped alternatively as Onlay (mesh over external oblique, 50 cases) & inlay (preperitoneal, 50 cases) meshplasty. Observation in both the groups were made with regards to duration and ease of operation, placement and duration of drainage, wound complications, hospital stay, return to daily activity and recurrence. All patients were given a single dose of cefotaxime sodium 1 gm i/v on induction. Thereafter oral cefixime 200mg twice daily was given for 5 days. Early mobility was strongly encouraged as cultural attitudes towards surgery in our setting are prohibitory to early ambulation for several days in postoperative period. Follow up every three monthly for 24 months was done to see late wound complications like sinus, neuralgia and recurrence of hernia etc. Conclusions were drawn using unpaired student t-test.

RESULTS

The male to female ratio was 2.3 : 1.7 showing that incidence of ventral hernia is more in males. In the study

most of patients (50%) were of labour class 30% being farmers in both groups. Surgery on female pelvic organs was most common primary procedure where incisional hernia occurred. The mean total time for surgery in sublay group was 63.15 ± 15.0 (36 – 96) minutes compared to 49.35 ± 8.29 (30 – 90) in onlay group ($p < 0.001$). Suction drain was put in all cases of inlay meshplasty while no drain was put in 10 cases of onlay meshplasty. Drains in sublay group were removed after 48 hrs on average except in 8 cases in which drains were removed on 7th day. In onlay group drain was removed after 48 hrs on average except in 6 patients where prolonged serous discharge was present & drain was kept for 5 days. The mean ease of operation (surgeon factor being constant) experienced in sublay groups was 6.50 while it was 7.00 in onlay group ($p > 0.05$). Postoperative complications like erythema/cellulitis, hematoma, seroma & wound infection were comparable in both the groups. In sublay 22.5% while 15% in onlay groups had one or other complications. Mean duration of hospital stay in sublay was 6.8 ± 1.50 day whereas it was 4.6 ± 1.30 days in Onlay group ($P < 0.001$). Time off work in patients in sublay groups was 4.48 weeks as compared to 2.87 weeks in Onlay group ($p < 0.05$). There was no recurrence in either of the groups after a 100% follow-up of minimum 24 months.

DISCUSSION

Ventral hernia in the anterior abdominal wall includes both spontaneous and, most commonly, incisional hernias after an abdominal operation. It is estimated that 2 to 10% of all abdominal operations result in an incisional hernia. Small hernias less than 2^{1/2} cm in diameter are often successfully closed with primary tissue repairs. However, larger ones have a recurrence rate of upto 30-40% when a tissue repair alone is performed³. Hernia recurrence is distressing to patient and embarrassing to surgeons. Nowadays tension free repair using prosthetic mesh has decreased recurrence to negligible. Despite excellent results increased risk of infection with placement of a foreign body and cost factor still exist; however, operating time and hospital length of stay are shortened. Primary tissue repair is associated with higher unacceptable recurrence rate, nowadays, tension free mesh repair is ideal hernia repair technique⁴.

The mean total time taken for the operation in "sublay" groups was 63.15 ± 15.0 mts compared with 49.35 ± 8.29 mts in 'Onlay' group and was found to be statistically significant ($P < 0.001$). The difference of time can be accounted due to more dissection time needed for creating preperitoneal space. Securing reasonable hemostasis is

another burden on time. Ease of operation is largely subjective (surgeon factor being constant) and depends on individual surgeon's experience, exposure and planning, quality of assistance, conducive facilities like light, cautery, instruments quality and sutures etc. Keeping all these factors constant, a subjective gradation on a scale of 1 – 10 would give fair degree of idea of difficulty in a particular operation with regard to onlay and sublay placement of mesh. In our study ease of operation of either group was found statistically insignificant ($p > 0.05$) suggesting that fair degree of experience, meticulousness and gentleness of sublay or onlay placement should be equal in terms of skill.

Apart from recurrence other postoperative complications like seroma formation, hematoma, cellulitis, wound infection attributed largely to extensive dissection and tissue handling during hernia repair. In our study no significant difference in these complications in either group was found except that there was slightly more chances of seroma formation in sublay groups which may be due to extensive tissue dissection and increased blood loss. Duration of hospital stay give us an indirect indication of degree of morbidity in terms of postoperative complication. The mean duration in sublay groups was 6.8 days compared to 4.6 days in onlay group and were found to be statistically significant ($p < 0.001$). The information was obtained during follow up as how long it took each one of them to return to their routine activities. It was observed that time off work in sublay group was 4.48 wks compared to 2.87 wks in onlay group, the difference was found to be statistically significant ($p < 0.05$). On two year follow up no recurrence was found in either group, similar results were also observed by others¹. Infact as per literature, the best position for inserting the material has not been conclusively established; but limited studies² have shown that meshes implanted on the abdominal aponeurotic layer showed better and early incorporation (higher collagen deposition, capillary density and cell accumulation) and increased tensile strength reflecting tighter anchorage to the abdominal wall. One European study has shown that Onlay technique had significantly more complications as compared to other technique but we have not found such results in our study⁵. Thus it can be safely said that based on above parameters onlay is a better technique than sublay in terms of placement & overall convenience. There is paucity of literature but an experimental study² has also shown superiority of onlay technique based on different parameters. However in few studies it was found that ideal position for mesh repair appears to be retromuscular, where the force of abdominal pressure holds the prosthesis against deep

surfaces of muscles^{1,3}. Even after long term follow up, recurrence rates around 10% are possible¹. This is all the more necessary as the world literature is scanty and there is great interest in hernia surgery using mesh these days.

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