



EFFICACY OF SUCTION DRAIN IN SEROMA PREVENTION IN LAPAROSCOPIC VENTRAL HERNIOPLASTY (LAP IPOM)

General Surgery

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ABSTRACT

BACKGROUND : Seroma formation is most serious complication of Laparoscopic Ventral Hernia Repair . We evaluate the incidence of seroma and efficacy of closed suction drain in prevention of seroma in Lap IPOM .

METHOD : Total 40 patient were enrolled , out of 20 included in study group(Group 1) in which closed suction drain was placed and in 20 patients included in control group(Group 2) in which no drain was placed . Comparison of volume of seroma was done in both the groups at 1-7th day , 1st month and 3rd month by clinical and USG Examination .

RESULT : On 5-7 th day seroma was detected in all the cases (p value =.001) . At the end of 90 th day , 85% (n=17) of cases of study group had no seroma while 70% (n=14) of control group had residual seroma .(p value .001)

CONCLUSION : Placement of closed suction drain anterior to mesh in Laparoscopic ventral hernia repair reduced the incidence of seroma and statistically significant difference was present between the two groups

KEYWORDS

Hernia , Drain , Laparoscopic , USG

INTRODUCTION

A seroma is a pocket of clear serous fluid that sometimes develops in the body after surgery [1] . Seroma formation is the most common complication of Laparoscopic Ventral Hernia Repair that develop above the mesh and within the retained hernia sac postoperatively . In various studies the mean incidence of seroma is upto 100% of cases ; but it typically resolves spontaneously without intervention [2,3,4,5] . It is considered a complication if it is apparent more than 8 weeks after surgery and its mean incidence is 2.6 %.[3]

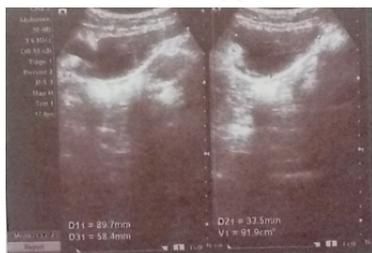


Fig 1 USG Examination showed seroma anterior to mesh

There are various methods to reduce seroma formation. One of the most important of these is the placement of a drain [6,7]. But routine use of drains has not been studied in Laparoscopic Ventral Hernia Repair.

MATERIAL AND METHOD

In our study we evaluate the incidence of seroma and efficacy of closed suction drain in prevention of seroma in Lap Ventral / Incisional Hernia Repair (Lap IPOM) using Dual Mesh . This study is Prospective Randomized Case Control study conducted in Fortis Escorts

Faridabad from March 2011 – Jan 2013 . Total 40 patients of Ventral/Incisional Hernia enrolled in study in which Laparoscopic Intraabdominal Onlay Mesh Repair was done using Dual Mesh . Patients were equally divided into Study group (n= 20) in which closed suction drain was placed intraoperatively anterior to mesh and Control group (n= 20) without drain . Patients having intrabdominal pathology and needing conversion to open were excluded from the study .After taking history and clinical examination , laparoscopic onlay Mesh hernioplasty was done as per SAGES Guidelines. Pneumoperitoneum created using palmers point and ports were placed . Adhesiolysis done and Dual mesh placed and secured intraperitoneally covering 4-5 cm all around the defect with tackers and intracorporeal sutures .Hernial sac was left insitu and no closure of defect was done . One 14 F' romovac drain was placed through 5mm lateral port anterior to mesh and closed suction was applied . Clinical and USG examination were done in all the 40 patients at 5-7th day ,30th and 90th postoperative day to measure the size and volume of seroma . Drain output were calculated in all the patients with drain and drain was removed once drain output reduced to 15 ml/day . Data was collected and statistical analysis was done using Chi-square test . p value was taken as level of significance .

RESULT :

1.AGE DISTRIBUTION

The mean age of total population was 47.40+11.038 . The mean age of patient which was with drain was 49.45+10.560 and patient without drain (group II) was 45.35+ 11.389. The p value when comparing the means was not significant. It shows that two groups had comparable age distribution.

2.GENDER DISTRIBUTION

In this study 40 patients were enrolled out of which 20 males and 20

females. The p value when comparing the means was not significant. It shows that two groups had comparable sex distribution.

3. TYPE OF HERNIA

Of the 40 cases , 27 (67.5%)cases were of paraumbilical hernia , 11(27.5%) cases of incisional hernia and 2 (5%) cases of epigastric hernia. In Group –I Incidence of paraumbilical hernia 70%, Incisional hernia 25%, and epigastric hernia 5%.

In Group –II , Incidence of paraumbilical hernia 65%, Incisional hernia 30%, Epigastric hernia 5%. p value was 0.938 ,so there was no significant difference between the two groups and both the groups were comparable.

4. SIZE OF HERNIA

In all the 40 case size of hernia measured preoperatively in cm2 .The average mean of size of hernia 31.48 cm2 + 3.755 . In Group –I , Size of hernia 37.30 + 6.278 . Group –II , Size of hernia 25.65+ 3.862 . pValue > .01 So there is no significant difference between the two groups and both the groups were comparable.

5. SIZE OF DEFECT

In all the 40 cases, size of the defect was measured intraoperatively in cm2 after reducing the content of hernia. Mean size of defect of all the 40 cases, 9.375 +- 0.861

In group-I Size of defect 8.3 + 0.6722 and in In group –II Size of defect 10.450+ 1.571 . p value .002, So there was highly significant difference between the two groups.

6. TYPE OF MESH

Three types of dual meshes used intracorporeally, these were of (Proceed mesh , Physio mesh, and Dyna mesh) In Group-I 65% cases Physio mesh , 25% cases Dyna mesh and 10% cases Proceed mesh was used . In Group –II 30% cases Physio mesh , 60% cases Dyna Mesh , 10% cases Proceed mesh , were used . p value .012 . So there was significant difference between the two groups .

7. AVERAGE OPERATING TIME

In all the 40 cases mean operating time 164.25 min + 4.859 . In Group-I mean operating time 174.25+ 7.974min. In Group- II mean operating time 154.25+ 4.775min. P value .027 , So there was significant difference between the two groups and both the groups were comparable.

8. CLINICAL EXAMINATION (postoperatively)

1. SEROMA ON 5-7TH DAY

Seroma formation was measured in all the 40 case clinically postoperatively , externally .In Group –I, 60 % cases no seroma detected clinically , only 15% case had significant seroma . In Group –II, 65% cases developed significant seroma , and only 5% cases developed no seroma .So there was highly significant difference between the two groups .

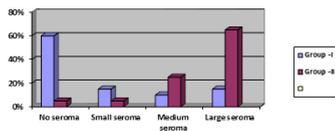


Fig 2 Incidence of seroma on 5-7TH day on clinical examination

2. SEROMA ON 30 TH DAY :

After 30 days , In Group –I , 85% cases detected no seroma clinically , 10 % cases detected clinically significant seroma . In Group –II , 20 % cases detected no seroma clinically , and 35% cases detected clinically significant seroma

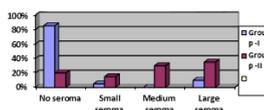


Fig 3 Showing incidence of seroma on 30TH day on clinical examination

P value < .0001 , So there was highly significant difference between the two groups .

3. SEROMA ON 90TH DAY

In Group –I , 90% cases detected no seroma clinically and 10% case had clinically persistent and significant seroma . In group –II , 10 % cases detected no seroma and 30% cases had clinically significant seroma .

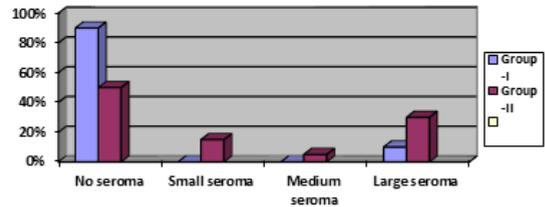


Fig 4: Showing incidence of seroma on 90TH day on clinical examination

P value < .040 , So it was significant statistically

9. USG FINDING

1. SEROMA ON 5-7TH DAYS

After 5-7 days about 50% of subjects in Group-I (Study group) on USG Examination have volume of about < 5ml as compared to 60% of subjects in group –II (Control) have volume 15-50 ml.

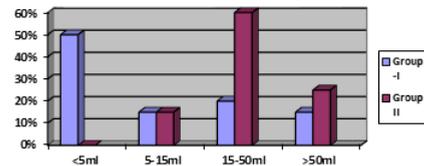


Fig 5: Showing incidence of seroma on 5-7 TH day on USG examination

The distribution of the volume on USG Examination on 5-7 days is significantly different between the Group- I and Group -II (p =0.002); p<0.01 at the 1% level of significance.

2. SEROMA ON 30 TH DAY

After 30 days about 50 % of subjects in Group-I (Study group) on USG Examination have volume of about < 5ml as compared to 30% of subjects in group –II (Control) have volume 15-50 ml.

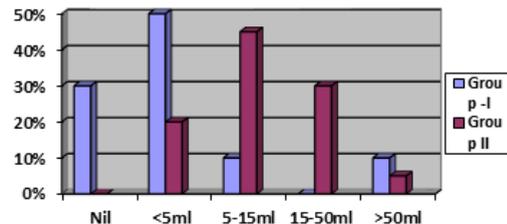


Fig 6 Showing incidence of seroma on 30 TH day on USG Examination

The distribution of the volume on USG Examination on 30 days is significantly different between the Group- I and Group -II (p =0.001); So there was very highly significant difference between the two groups

3. SEROMA ON 90 TH DAY

In Group –I , 85% of cases detected no seroma on USG Examination , and 5% of cases detected seroma 5-15 ml . In Group –II,30% of cases detected no seroma on USG Examination ,and 45 % of cases detected seroma about 5-15 ml .So volume of distribution on USG Examination in both the group significant statistically . p value .002 highly significant difference between the two groups

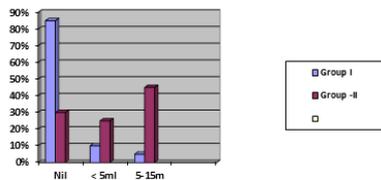


Fig 7 Showing incidence of seroma on 90 TH day on USG Examination

DISCUSSION

Laparoscopic intraperitoneal onlay mesh hernioplasty is gold standard for the treatment of ventral/ incisional hernia repair. There are various complications of laparoscopic ventral hernia repair, as seroma, recurrence, mesh infection, trocar site infection and cellulitis, wound infection, persistent pain, enterotomies and hematoma. Seroma formation is the most common complication in laparoscopic ventral hernia repair. It is hypothesized that seromas develop from secretions of hernia sac that was not excised during the laparoscopic repair thus a potential space is left between the mesh and the overlying hernia sac that can be easily filled with fluid.

The causes of seroma formation are multifactorial including the patient characteristics, presence of large hernia sac, extensive adhesiolysis in incisional hernias that damage blood vessels and lymphatics and creating large raw surface and dead space. [8,9]. However, it is a normal response of the body after mesh implantation and ultrasound examination revealed the presence of seroma in 100% of patient. [2] It was found that seroma formation was less if hernia sac cauterized and a large patch of mesh secured to overlap healthy margin at least 4 cm and by placing a full thickness suture in the center of the defect to reduce the dead space. [10,11]. Thus, there are various methods for the prevention of seroma. Cauterization of hernia sac, closure of hernia defect, use of fibrin glue, pressure dressings and placement of drain for reducing the seroma formation. Placement of closed suction drain is widely used method of preservation of seroma in open ventral hernia repair. However, there is no consensus in literature whether to drain the wound with closed suction drain [12].

The present study was conducted to ascertain the incidence of seroma and evaluate the efficacy of closed suction drainage in prevention of seroma in Lap ventral hernia repair. This study enrolled 40 patients divided into 2 groups. Group -1, study group (n=20), Group -2 Control group (without drain) n=20. We compare the two groups in terms of size of seroma clinical examination and volume of seroma by USG examination on 5-7th day, 30th day, 90th day after surgery. Mean age in study group was 49.45± 2.36yr and 45.35± 2.54 yr in control group. The study group had 9 females and 11 males and control group had 11 females and 9 males. On comparison, both the groups had comparable age and sex distribution. Other parameter, like type of hernia, size of hernia and size of defect were also comparable in both the groups. Mean operating time in study group (with drain) was 174.25± 7.974min and in control group (without drain) was 154.25± 4.775 min.

In various studies the incidence of seroma after lap ventral hernioplasty was variable. It may varied from 100% cases on USG examination and 35% of cases on clinical examination after 90th day. In our study we compared the two groups to detect the seroma by clinical and USG examination at 5-7th day, 30th day and 90th day and it was observed that seroma was present on clinical examination on 5-7th day in 40% (n=8) cases in study group as compared to 95% (n=19) cases in control group, p value < .001 (fig 2). On 30th postoperative day seroma was detected in 15% (n=3) cases of study group as compared to 80% (n=16) cases in control group (p value < .001) (fig3) and at the end of 90th day seroma was detected in 10% of cases in study group compared to 50% (n=10) cases in control group (p value =0.006) (fig 4). USG Examination done to confirm the findings of clinical examination. On 5-7th day postoperative seroma was detected in all the cases in study and control group. (fig5). On 30th postoperative day seroma was detected in 70% (n=14), cases in study group and 20% cases in control group (fig6). On 90th postoperative day seroma detected in 15% (n=3) cases of study group as compared to 70% (n=14) cases in control group (p<0.001) (fig 7). In our study USG detected even less than 5 ml of seroma in both the groups on 5-7th,

30th, 90th day which was missed on clinical examination. Thus USG is more sensitive in detecting the seroma. Our study detected that there was gradual reduction in size and volume of seroma on clinical and USG examination and placement of drain cause more reduction in size and volume of seroma that was detected clinically and confirmed by USG examination. It was hypothesized that reduction in volume of seroma by using closed suction drain in early postoperative period causes reduction in dead space and apposition of hernia sac to the mesh thereby promoting healing and preventing seroma formation even after the drain was removed. It was concluded that surgical closure of defect cause reduction of dead space and causes less seroma [12,13,14]. In our study we neither excised or cauterized the sac nor we closed the defect but we placed the drain in hernia sac over the mesh for the drainage of seroma and that reduced the incidence of seroma. Mean duration of hospital stay was 4.55 days in study group and 3.8 days in control group and there was no intraoperative and postoperative complication detected.

CONCLUSION :

In this study we compared the efficacy of closed suction drain in Lap IPOM. The incidence of seroma in lap ventral hernia repair was 70% in control group and 15% in study group at 90th postoperative day on USG examination. Thus placement of drain anterior to mesh in dead space reduces the incidence of seroma and statistically significant difference present between the two groups. USG is more sensitive in detecting the seroma than in comparison to clinical examination. Placement of drain in study group did not increase the morbidity and hospital stay.

Limitation of study:

1. Our study is small sample size study, larger sample would give more accurate measure of incidence of seroma.
2. In our study we studied only the efficacy of drain in seroma prevention, but other methods of seroma prevention, as cauterization of hernia sac, excision of sac, closure of hernia defect need to be studied in laparoscopic ventral/ incisional hernia repair. A multivariate analysis of all the techniques will help to ascertain the best method of seroma prevention.

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