



A PROSPECTIVE STUDY OF ANTERIOR COMPONENT SEPARATION TECHNIQUE IN REPAIR OF LARGE VENTRAL HERNIA IN A TERTIARY CARE HOSPITAL OF WESTERN RAJASTHAN.

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ABSTRACT

Background: In our tertiary care hospital of western rajasthan, we attend a number of ventral hernia patients. The incidence of incisional hernia after abdominal surgery likely exceeds 20% and can result in large, complex ventral hernias with loss of abdominal domain. This study was done to see the feasibility of Anterior component separation technique (ACST) with Onlay mesh repair of large ventral hernia not amenable to primary closure. This technique can restore abdominal wall functionality for defects up to 20 cm in transverse dimension at the level of the umbilicus.

Methods: 25 patients with large ventral hernia not amenable to primary closure were repaired by ACST with Onlay mesh augmentation. Preoperative defect size mapping, Pre- and post-operative monitoring and management of comorbidities were done. Early and late complications was noted. Patients were followed up for 9 months.

Results: In our study maximum patients in both male and female sex were of age group 61–75 year (36 %) with male to female sex ratio 3:2. Most common clinical finding were swelling (100%) and pain abdomen (72%). Co-morbidity present in our patients was COPD (20%), hypertension (20%) and diabetes mellitus (16%). Risk factor linked to post-operative complications seen were obesity (32% of cases), smoking (24%), diabetes (16%) and anemia (16%). In our study 20 % of cases were of spontaneous ventral hernia and 80 % of cases were of incisional hernia. The Size of defect varied from 9–16 × 6–10 cm² (length × width). In this study post-operative complications occurred in about

32% of cases. Seroma and SSI were in 12 % of cases and 4% of cases had paralytic ileus and pneumonia. The average duration of hospital stay in our study is about 5–15 days. ACST with mesh augmentation was found to be feasible with all 25 operated patient with 0% mortality and 0% hernial recurrence rate with 9 months follow up.

Conclusion: In conclusion, CST with onlay mesh repair is an effective method in managing large ventral hernias, especially in midline defects, with low morbidity and recurrence rate and manageable complication rates despite the co morbidities, as seen in our patient population. This technique can restore abdominal wall functionality for defects up to 20 cm in transverse dimension at the level of the umbilicus.

Keywords: ACST, Onlay mesh

INTRODUCTION

A ventral hernia is defined by a protrusion through the anterior abdominal wall fascia. These defects can be categorized as primary (spontaneous) or acquired and by their location on the abdominal wall. Incisional hernias are acquired hernias typically occur after surgical incisions. Incisional hernia is defined as “Any abdominal wall gap with or without a bulge in the area of a postoperative scar, which is perceptible or palpable by clinical examination or imaging studies.”¹ It is the only hernia considered to be truly iatrogenic. Incisional hernia is still one of the common postoperative complications of abdominal surgery.² Such hernias can occur after any type of abdominal wall incision, the highest incidence rate is seen with midline and transverse incisions.³ The incidence of incisional hernias continues to be 2–11% after laparotomy.⁴ The maximum incidence (63%) of incisional hernia occurs during the first 24 months after surgery.^{3,4}

Primary open suture repair of ventral hernias was done by only fascial re-approximation. It results in recurrence rates in excess of 50% in long-term follow-up.⁵⁻¹³ Tension-free fascial closure with mesh repair became the gold standard for elective ventral hernia repair¹⁴⁻¹⁶ with low recurrence rate of 1.4%, however large ventral hernia could not be repaired by this technique. The next revolution in hernia repair technique was Ramirez component separation technique (anterior abdominal reconstruction) for large ventral hernia. Recurrence rates after such component separation hernia repairs range from 10% to 22%, with mean follow-up periods of 9.5 months to 4.5 years.¹⁷⁻¹⁹

METHODS

This study was Observational descriptive type. This study was conducted in department of General Surgery, Dr. S.N. Medical College Jodhpur, from December 2019 to September 2020 after ethical approval. The sample size was 25 subjects. All patients with a large ventral hernia which appeared to be not amenable to direct closure without tension were included. All patients of age < 16 years and all cases where the abdominal wall defect appeared to be amenable to direct closure without tension, were excluded from study. All patients were managed with all standard treatment protocol. After taking informed written consent all patients were undergone component separation technique. Data were collected and analysed.

RESULTS AND DISCUSSION

The reconstruction of a large ventral hernia is challenging and technically demanding. Currently, there is no consensus regarding the best treatment approach despite new and evolving surgical techniques. Component separation (CST) is a modified technique used to provide adequate coverage for large midline abdominal wall defects.

In our study, 25 patients with large ventral hernia not amenable to primary closure were repaired by anterior component separation technique with onlay mesh repair. Out of 25 patients, 15 cases were of male sex (60%), 10 were female sex (40%). Maximum patients in both male and female sex were of age group 61–75 year (36%). The incidence of incisional hernia was observed more in male sex

(60%), with male to female sex ratio of 3:2, indicating high incidence of incisional hernia among male patients. De Vries Reilingh et al.¹³ observed 74% patients were male and 26% were female. Torregrosa-Gallud et al.²⁰ observed 48.4% male patient with average patient age of about 51.6 year. Most common complaint was pain abdomen (72%), abdominal distention (44%) and vomiting (16%). The most common clinical finding was swelling at hernial site (100%) with reducibility (88%) and impulse on coughing (88%). Previous surgical scar was present in 80% cases. Kulah et al.²¹ also observed mass in abdominal wall and localized pain in 39% cases. Chavan et al.²² reported 94% cases presented were reducible hernia and 6% cases presented with irreducible hernia.

Co-morbidities were COPD (20%) followed by Hypertension (20%) and Diabetes Mellitus (16%). Obesity, Diabetes and Smoking were the most common risk factors. Obesity was present in 32% of cases, smoking in 24% of cases, diabetes in 16% of cases and anemia in 16% of cases. Similarly Soliman et al.²³ observed Obesity as risk factor in 53.3% cases, Diabetes in 26.7% cases and COPD in 40% cases, anemia in 46.7% cases and malnutrition in 36.7% cases. Torregrosa-Gallud et al.²⁰ observed Smoking in 25.3%, Diabetes in 31% as a risk factor.

Out of 25 cases, most cases (95%) were operated for emergency conditions like trauma, peritonitis, intestinal obstruction etc. and 5% cases were operated in past as elective procedure. Soliman et al.²³ reported patients with intestinal obstruction (20%), gastrointestinal tract malignancy (33.3%), miscellaneous (gynecological and urological) (23.3%).

In present study 20% of cases were of large ventral hernia and 80% cases were of incisional hernia. The hernia defect was present below umbilicus in 52% of cases and above umbilicus in 32%. Chavan et al.²² reported that out of all the anatomical sites incisional hernia was found to be occurred most in infra umbilical site 42% followed by suprapubic and umbilical 18%.

In 16% of cases defect was present both above and below umbilicus. In our patients width of defect was about 6–10 cm. Out of which 68% cases had defect size of 6.1–9 cm, 20% cases had defect size of >9.0 cm and 12% cases had defect size of 6 cm. The length of defect was about 9–16 cm. Out of which 68% cases had maximum defect of size 9–15 cm, 28% cases had defect size >15 cm and 4% had defect size <9 cm. De Vries Reilingh et al.¹³ reported mean length of defect 24.4 ±8.9 cm and mean width 13.3 ±3.9 cm. Jason et al.²⁴ observed mean defect size 12.2 cm (5.9–20 cm).

In our study, 32% of patient had omentum and small bowel as hernia sac content, 28% patient had omentum and large bowel as hernia sac content, 20% patient had small bowel as hernia sac content and 16% patient had both small and large bowel as hernia sac content. Kulah et al.²¹ observed contents of hernial sac were ileum (39.7%), omentum (27.1%), ileum with omentum (10.9%) and colon (28.5%). In all patients reduction of content with anterior component separation with mesh hernioplasty was done. Post-operative complications were observed in 32% cases. Seroma and SSI were in 12% of cases and 4% of cases had paralytic ileus and pneumonia. (Table 1) De Vries Reilingh et al.¹³ reported post-operative complications in 32.6% cases. Torregrosa-Gallud et al.²⁰ reported seroma (35%), hematoma (9.1%), wound infection (7.2%), paralytic ileus (2.5%) and pneumonia (1.4%). Soliman et al.²³ observed wound infection as the most common complication.

Table 1: Post-operative complication among study participants

S.No	Complications	Number of Patients
1	Seroma	3
2	Hematoma	0
3	Wound Infection (SSI)	3
4	Cellulitis	0

Table 1: Post-operative complication among study participants

5	Skin Necrosis	0
6	Infected Mesh	0
7	Enterocutaneous Fistula	0
8	Intra-abdominal Collection	0
9	Post-operative Hypotension	0
10	Intra-abdominal Hypotension	0
11	Paralytic Ileus	1
12	Pneumonia	1
13	Renal Failure	0

The average duration of hospital stay was 5–15 days. Torregrosa-Gallud et al.²⁰ observed average stay of 6–18 days. Ramesh Punjani et al.²⁵ reported average stay of 7 days.(Table 2)

Table 2: Duration of Hospital Stay

S.No.	Duration (Days)	Number of Patients
1	≤ 7	08 (32%)
2	8–15	17 (68%)
Total		25 (100%)

All operated patients survived with no mortality and no recurrence at 9 months follow up. Similar findings were reported by Punjani et al.²⁵, Abulezz et al.²⁶, Mohd. Samir et al.²⁷ and Jason H. Ko et al.²⁴.

CONCLUSION

Incisional hernia are most common acquired hernia after abdominal surgery. The incidence of incisional hernia after abdominal surgery likely exceeds 20% and can result in large, complex ventral hernias with loss of abdominal domain. Component Separation Technique with onlay mesh repair is an effective method in managing large ventral hernias, especially in midline defects, with low morbidity and recurrence rate despite the co morbidities. This technique can restore abdominal wall functionality for defects up to 20 cm in transverse dimension at the level of the umbilicus. Limitation of our study was short duration of follow up.

Declarations

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