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A Prospective Observational Study on Scola for Ventral Hernia with Diastasis Recti – Our Experience at a Tertiary Care Hospital

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Abstract:-

- ***Background***

Diastasis recti (DR) is often found in patients presenting with umbilical and epigastric hernia. There are higher rates of recurrence in these patients after an isolated hernia repair. We present our initial experience at tertiary care hospital in J&K (SMHS, Srinagar) with a SubCutaneous OnLay endoscopic Approach (SCOLA) to address these concurrent pathologies in a single hybrid procedure.

- ***Methods***

Between August 2020 and December 2022, a prospective observational study was conducted on 18 patients who underwent SCOLA procedure in GMC Srinagar. Subcutaneous dissection was carried out between suprapubic region superiorly till the xiphoid process and laterally till the linea semilunaris. Hernia contents were reduced and defects were incorporated into anterior diastasis recti plication, with running barbed suture. An Onlay mesh was placed to cover the dissected space, and subcutaneous drains were placed.

- ***Results***

Of 18 patients, 14 (71 %) were female and 4 (29 %) were male . The mean age was 47 years , mean BMI was 28. 82 kg/m2 . The mean of hernia defect size came out to be 2 cm . Mean operative time was 98.66 mins. The mean follow-up time was approximately two months . Five (27. 78 %) patients developed seroma, and two (11.11 %) patients had hernia recurrence.

- ***Conclusions***

SCOLA technique is safe and effective approach for patients with small midline ventral hernias associated with Diastasis recti. In our study we found that higher rates of post-operative complication were there in patients with higher BMI, which shows that patient selection and pre-operative counselling is essential for better outcomes.

I. INTRODUCTION

Diastasis of the Rectus Abdominis Muscles (DMRA), it is defined as the distancing from the muscular borders in midline more than 2.2 cm, and is not a rare condition [1]

There is bulging in the anterior wall of the abdomen when the patient exerts contraction of the abdominal musculature or when there is an increase of the intra-abdominal pressure, it is often confused with hernia of the abdominal wall. Diastasis of recti is not usually associated with symptoms, pain or discomfort, as well as any risk of complications [2, 3]

Diastasis of rectus abdominis muscle is associated with abdominal wall hernias, in patients with excess skin are usually managed by a large transverse incision in the lower abdomen with dermolipectomy [4,5,6]

Plication techniques are often used and may or may not be associated with mesh placement. However, there is a group of patients in whom there is no need for skin resection, in which conventional operation with midline longitudinal incisions results in unfavourable results from the aesthetic point of view [7,8]

Therefore, to improve these results, in the 1990s, the first alternatives of Diastasis of rectus abdominis muscle correction with the use of endoscopic techniques without the need for large cutaneous incisions was described [9,10] The conventional laparoscopic technique of intraperitoneal mesh placement does not solve the problem of diasthesis unless it is also repaired by intracorporeal or transfascial sutures.

Therefore, the aim of our study was to describe this relatively new technique (SCOLA) for the repair of ventral hernias along with the plication of the diastasis of the rectus abdominis muscles.

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II. METHODS

Between August 2020 and December 2022, a prospective observational study was conducted in the department of general surgery GMC Srinagar during which , 18 patients were admitted for correction of ventral hernia along with the plication of diastasis of rectus abdominis muscle, by pre-aponeurotic endoscopic technique.

The repair was indicated for patients presenting with primary abdominal or incisional hernias associated with diastasis of the rectus abdominis muscles.

Exclusion criteria included : contraindication for general anaesthesia, previous history of abdominoplasty, coagulopathy, cirrhosis of the liver or renal insufficiency. Patients with non-midline hernias, those with no desire for diastasis correction.

Hernia recurrence was determined by patient self-reporting with selective use of postoperative imaging. Patients were followed up at two weeks, one month, three months, and six months post-operatively.

- *Technique*

Patients were placed in the supine split-leg position . A transverse 3 cm incision was made in the suprapubic region and carried down to the level of the anterior rectus sheath. A 10 mm port was placed in this incision and secured using a subdermal purse-string monofilament suture to prevent leakage of carbon dioxide as the subcutaneous space was insufflated to 15 mmHg. Two 5 mm working ports were placed approximately 5 cm from the midline in the bilateral lower quadrants.

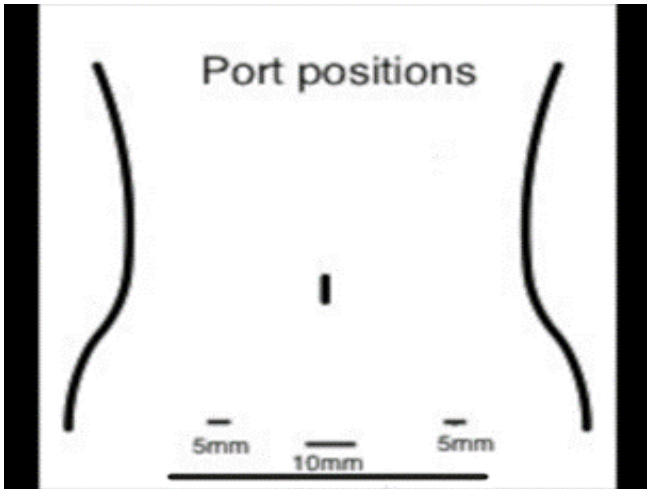

Fig 1Port Placement

Pre-aponeurotic dissection was carried out between xiphoid process superiorly and bilaterally till the linea semilunaris using monopolar energy (Fig. 2).

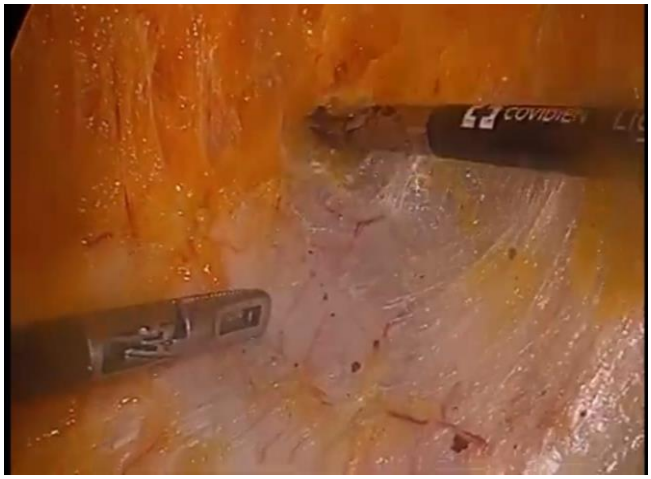
Fig 2 Making a Subcutaneous Plane

Hernia contents were reduced. The edges of the rectus muscle were identified on the medial side and marked followed by anterior plication of diastasis with running barbed suture (Fig. 3).

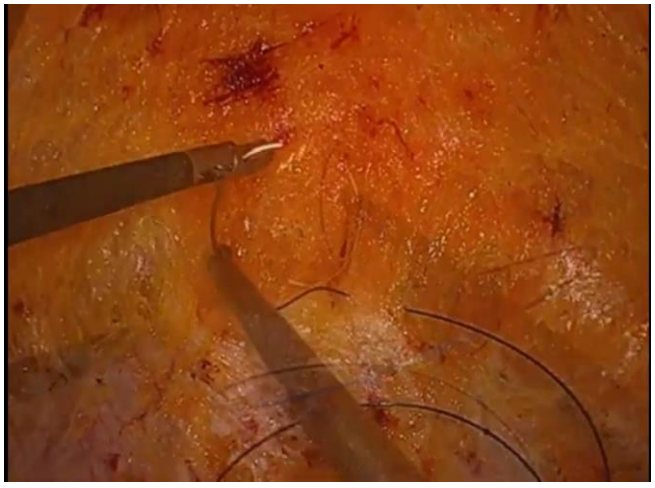
Fig 3 Plication of Diastasis.

Hernia defects were closed during plication along with an onlay mesh placement and mesh secured using absorbable tacks. (Fig.4). All the cases were performed laparoscopically.

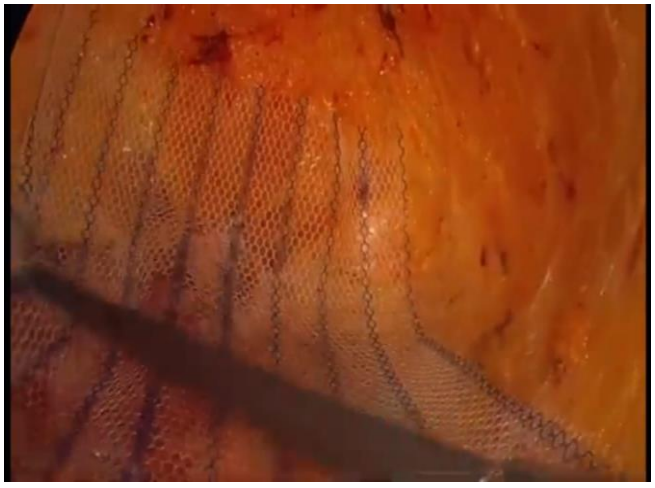
Fig 4 Placement of Mesh

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III. RESULTS

Patient demographics are as listed in Table 1. A total of 18 patients with umbilical or epigastric midline hernias and Diastasis recti underwent SCOLA repair. Out of 18, 14 (71%) were female. The mean age was 47 years. Average body mass index (BMI) was 28.82 kg/m2.

Table 1 Patient Demographics

VARIABLE	NUMBER (n = 18)
Female sex, n (%)	14 (71 %)
Mean age	47 years
Mean BMI	28.82 Kg/ m2

Operative characteristics and post operative complications are as listed in Table 2.

In our study it was found that mean defect size was 2 cm, mean operative time was 98.66 minutes. Subcutaneous drains were placed in six (33%) patients. The mean follow-up time was approximately two months (63 days). Subcutaneous drains were removed when output was less than 50 mL/day, usually with in two weeks. Complications noted in our study were that five (27.78%) patients developed seroma and two (11.11 %) patients had hernia recurrence diagnosed on post-operative CT. (Table 2).

Table 2 hernia recurrence diagnosed on post-operative CT

VARIABLE	NUMBER (n= 18)
Defect size , (mean)	2 cm
Mean operative time	98.66 mins
Seroma formation	5 (27.78 %)
Hernia recurrence	2 (11.11 %)

IV. DISCUSSION

The presence of diastasis recti with midline ventral hernias complicates traditional repair techniques.

Therefore, both plication and hernia repair methods can be applied to diastasis recti repair using either an open or laparoscopic approach. Subcutaneous dissection allows a favourable anterior approach for diastasis recti plication while still using a minimally invasive approach. Use of prefascial onlay mesh prevents entry into the peritoneal cavity, therefore avoiding major laparoscopic complications such as enterotomy and bowel resection while allowing the use of inexpensive polypropylene mesh and leaving the fascial planes intact for future repair in case of recurrence.[11, 12]

In our study it was found that post operative complications were seroma formation in 27.78 % of patients and recurrence of hernia in two patients ,our results were comparable to study conducted by Christiano Marlo Paggi CLAUS ,Department of Surgical Clinic and Mini Invasive Surgery - Jacques Perissat Institute, Positivo University, Curitiba, PR, Brazil with seroma being most frequent complication (n=13, 27%) and recurrence noted in one patient . [13]

Our data also suggests that higher pre-operative BMI is associated with greater risk of seroma formation. This may be related to the extensive subcutaneous dissection required for this procedure, which creates a large potential space for fluid accumulation.

Our study had several limitations mainly shorter sample size , shorter duration of study .

V. CONCLUSION

Therefore in conclusion SCOLA technique was found to be safe, and effective alternative for patients with ventral hernias associated with diastasis of recti, but requires an appropriate patient selection to decrease the complication rates further.

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