Long term outcome of selective biological mesh placement in patients undergoing large para-esophageal hernia repair - Biological mesh delays recurrence

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INTRODUCTION

Laparoscopic Para-oesophageal hernia repair (LPEHr) is associated with high recurrence rate between 30% and 42%[1]; the use of synthetic mesh to reinforce the hiatal closure has been controversial, with trials demonstrating a significant reduction of recurrence rate[2]. However, there exist potential problems introduced by using a synthetic mesh at the dynamic hiatus, such as mesh erosion, ulceration, stricture, and dysphagia with an increased complication rate and an increased poor functional post operative results in some studies[2].

Lately, a high number of biomaterials has been developed, usually containing extracellular porcine collagen that serves as a temporary matrix that reinforce the hiatal surgical closure to increase the strength of this anatomical area with the aim to reduce recurrence rates avoiding potencial complications.

AIM

The aim of this study is to compare long-term results after laparoscopic surgery of Large Para-oesophageal hernia repairs with selective placement of a Biological mesh (BM).

METHODS

We prospectively studied 67 consecutive patients with Type III and Type IV Para-oesophageal hernias (PEH) who underwent laparoscopic repair (PEHr) from May 2016 to January 2023 for symptomatic PEH.

The criteria used to perform a hiatal crus reinforcement were:

- Type IV Para-oesophageal hernias <72 years-old.
- Type IV Para-oesophageal hernias with poor crus tissue quality after resection or High crus tension after reconstruction.
- Type III Para-oesophageal hernias with poor crus tissue quality after resection, High crus tension after reconstruction or Large Hiatal defect.
- All Redo/repairs.

The reinforcement was made with a U shaped tailored biological mesh Permacol™ collagen-based implant of 10 cm. x 10 cm. x 1.5 mm.

We developed a specific database to collect all data and it was collected by all performing consultant surgeons in the out-patient clinic.

Radiological recurrence was defined as the presence of >2cm. intra-thoracic stomach on post-operative follow-up on a CT scan and/or an upper gastrointestinal (UGI) series in doubtful cases.

Follow-up CT scan were performed 6 months and yearly after surgery; patients were reviewed in the out patient clinic by every performing surgeon. All radiologic follow-up test were revised and diagnosed by a dedicated Upper GI radiologist.

RESULTS

A total of 67 consecutive LPEHr were performed, 55 females and 12 males:

- 33 patients with Type III PEH.
- 34 Patients with Type IV PEH.

Baseline characteristics were: 18% (12) morbidly obese, 10% (7) with Type II Diabetes Mellitus and 12% with Redo-repairs.

Following our mesh reinforcement criteria, we placed 33 Permacol™ tailored biological mesh and it was indicated mainly in Type IV PEH with 27 patients, 79% of them and in 6 patients with Type III PEH, 18% respectively.

Median Follow-up time was 36.5 months (3-86 months).

Overall recurrence rate was 29% (19 patients) mainly no symptomatic 63% (12 patients) with 2 patients (11%) with mild medically controlled symptoms and 26% (5 patients) presented a symptomatic recurrence with dysphagia (2 patients) and/or 3 patients with recurrent not medically controlled gastro-oesophageal reflux, four patient required re-do repair (21% of all recurrence, 19 patients) and one patient was lost on the follow-up.

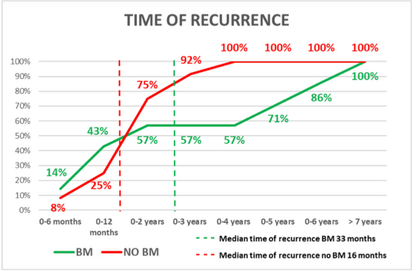
Thirty seven percent (7) of patients with a biological mesh reinforcement presented recurrence and 63% (12) of patient without a Biological mesh suffered a recurrence without a statistical difference between the two groups *p=0.22*.

Median time of recurrence was 22 months in the whole series; patients with BM presented a statistically significant delayed recurrence when compared with patients without BM, with a median time of recurrence of 32 vs. 15 months respectively *p=0.04. (graph 1).*

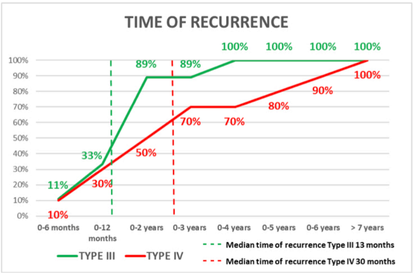
There was a statistical difference in recurrence rate in patients older than 65 years-old irrespective if they were reinforced with a Biological mesh X^2 *p<0.05*.

We indicated more BM in patients with Type IV PEH than in patients with type III PEH X^2 *p<0.05*. Paradoxically, median time of recurrence was shorter in type III PEH compared with type IV PEH repairs 13 vs 30 months *p=0.04,* even being a Type IV PEH a more severe disease. (graph 2).

There was 19% morbidity with 1.4% mortality rate; 4.4% of our primary cases required re-operation for complications and 5.9% required a redo surgical repair.



Graph 1



Graph 2

CONCLUSIONS

We selectively have used a biologic mesh in 33 of our cases mainly Type IV PEH repairs and redo-repairs. In type III PEH repairs, we have indicated less BM reinforcement according to our criteria and we obtained an unexpected earlier recurrence rate compared with type IV PEHr; despite of being a more complex disease.

Our data suggest that the use of a U shaped Permacol™ Biologic implant as a hiatal crus reinforcement delays recurrences over time and could lead to less need for redo repair in the future of this disease.

Irrespective of our 29% recurrences only 5.9% needed redo-repairs during follow-up.

REFERENCES

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