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CASE REPORT

Repair of recurrent umbilical hernia with Duramesh™, a suturable mesh: Our first application experience

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ABSTRACT

Suture tension due to the structure of the sutures used during closure of laparotomies and the technique applied, or the cutting of the tissue while the stitches are being pulled, predisposes to incisional hernia. It is known that repairs made with the use of mesh provide more successful results in incisional hernia surgery compared to primary closure of the defect with sutures. For this reason, a multifilament suturable mesh was developed to prevent the suture from cutting the tissue due to tension at the stitch and tissue interface. In this case, the approach and early results of a recurrent umbilical hernia case operated on with suture-shaped mesh (Duramesh™), a new product developed for use in incisional hernias and abdominal closure, are presented.

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INTRODUCTION

Despite advances in surgical techniques and suture technology, incisional hernia (IH) remains a common complication after abdominal surgery. It is known that IH develops in approximately 15% of patients in the general population after midline laparotomies (1). Complication rates after IH repair are high and recurrence rates vary between 23 and 50% (2). There are many factors that contribute to the risk of developing IH, including obesity, age, diabetes mellitus, smoking and wound infections. The incision site, the suture material used and the closure technique are among other etiological reasons (3).

It is thought that the sharp suture filament used to close the laparotomy incision acts like a sharp wire, cutting the abdominal wall tissues and causing IH formation over time. Therefore, to limit shrinkage while approximating tissues, a suturable mesh of individual polypropylene filaments caged together in a macroporous cylindrical configuration was developed (Duramesh™, Mesh Suture Inc., Chicago, IL) (4).

We present our observations and early results of our case of recurrent umbilical hernia, which we operated on with the suture-shaped Duramesh™, a new product developed for use in IH and abdominal closure.

CASE REPORT

A 51-year-old male patient, who had no additional disease in his history and underwent mesh-free repair of a 2 cm umbilical hernia a year ago, presented with complaints of recurrent umbilical hernia. A defect area of approximately 4 cm in the umbilicus was detected in the physical examination and ultrasonography. Preoperative preparations and informed patient consent were completed. The surgical incision was performed with a smile-shaped incision below the navel. After the hernia defect in the fascia was isolated, the 4 cm defect was closed with Duramesh™ (Msİ, Chicago) number "0" using one by one suturing technique (Figure 1).

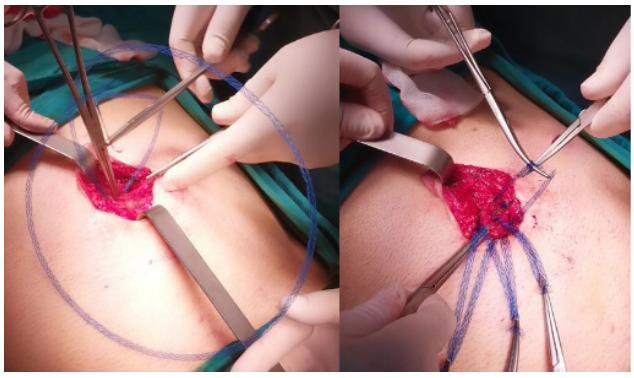

Figure1: Suturation image with suture-shaped mesh (Duramesh™)

No additional mesh was needed (Figure 2).

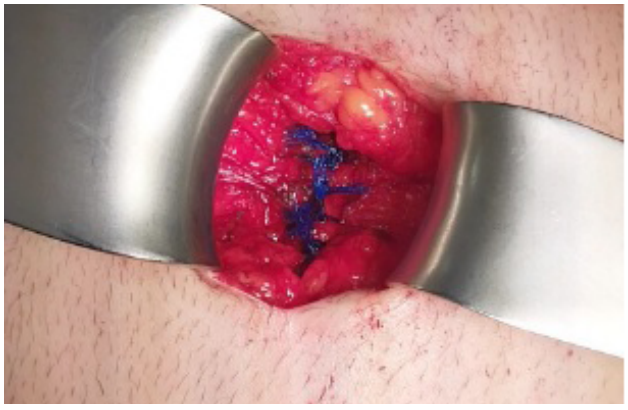

Figure 2: Final image after intraoperative suturing

The patient was discharged on the first postoperative day without any problems. There was no problem at the postoperative 10th day, first month and third month follow-ups, and the wound healed without any problems. The follow-up of the patient, who has no recurrence, continues.

DISCUSSION

Many methods are being tried to prevent the development of incisional hernia, such as the "small bite" suture technique, closing the incisions with prophylactic mesh, releasing the anterior and posterior components, botulinum toxin injection into the lateral abdominal muscles, and preferring minimally invasive techniques instead of laparotomies (1,3). After midline laparotomy, it has been shown that closing the fascia using the small bite technique with a 4:1 suture length/wound length ratio reduces the possibility of incisional hernia development (5). However, the primary culprit in the development of IH, which occurs in 24% of laparotomy closures, is shown to be cutting the tissue due to pulling of the sutures (6). Therefore, Duramesh™,

defined as a suturable mesh, increases the implant surface area in contact with the tissues compared to a standard suture. In an animal study, monofilament was rated as "non-irritating" to tissues compared to polypropylene (4). Results comparable to reported standard materials in the tendon repair model made with suturable mesh and the sternum closure model show that the usage area of this material can be expanded (7,8).

Yurtkap et al. (9) reported in their animal study that Duramesh™ had similar results to Polydioxanone (PDS), a traditional laparotomy closure material. They also think that it may help prevent IH by enhancing wound healing thanks to its three-dimensional, macroporous structure (9).

In the case we presented, there was no difficulty in using the product during primary closure of the defect with Duramesh™ in umbilical hernia repair. Thanks to its structure that can easily pass through tissues and its ability to be tied like a suture, the defect could be closed primarily. We describe it as encouraging for the use of the product that no complications or recurrences such as wound infection or seroma were observed in the early patient follow-ups. However, its results in clinical practice are not clear because it is not widely used yet. As the use of Duramesh™ becomes widespread, it will be possible to compare its advantages and disadvantages through controlled studies.

Informed Consent

Informed consent was obtained from the patient.

Declarations

This study was accepted as a poster presentation at the "23rd National Surgery Congress" organized by the Turkish Surgical Association on 24-28 April 2024 / Antalya. The authors received no financial support for the research and/or authorship of this article. There is no conflict of interest. Ethical committe approval is not required because of this article is a case report.

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