

Case Report

Laparotomy closure using a surgical spoon

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Abstract

This study introduces the novel use of a surgical spoon in the closure of midline laparotomy and compares it to known instruments such as the malleable ribbon retractor and the fish glassman viscera retainer. The surgical spoon was implemented in multiple cases at King Faisal Specialist Hospital & Research center, to help close laparotomy incisions, specifically in hyperthermic intraperitoneal chemotherapy surgeries. Unlike currently available retainers, the spoon's concave shape protects underlying viscera and guides the needle, during closure.

Keywords: instruments; technique; laparotomy; spoon; surgery; closure

Introduction

The development of surgical instruments is an artistic innovation of surgeons dedicated to creating more efficient, and ergonomic methods to aid in surgeries, as well as in preventing complications post-surgery. The modern era of tools is a product of generations of surgeons, physicians, and earlier; barbers and village healers who created the blueprint for the tools we use today. Earlier tools were mostly simple in design, such as needles, and scalpels. The development of tools such as robots and cautery has catapulted surgeons to performing more complex procedures [1]. But sometimes innovation strikes in the mundane and simple. A spoon. The simple design of the spoon has proven over multiple cases to aid in the closure of laparotomies. With the curve of the spoon, both protecting underlying viscera, and guiding the needle for proper closure. At King Faisal Specialist Hospital and Research Center, Riyadh (KFSH&RC), we have explored the use of a spoon in abdominal laparotomy incision closure.

The use of the spoon in surgical wound closure has been previously reported twice in literature. One reports the use of the surgical spoon in closing a median sternotomy in 45 patients undergoing various procedures [2]. The other, reports a left anterior thoracotomy closure following a minimally invasive direct coronary artery bypass [3]. These cases have found the spoon useful in facilitating safer closure by protecting underlying structures from being punctured by steel wire or needle. By placing the spoon underneath the sternal or intercostal edge, the steel wire or needle will fall into the concave surface of the spoon, which allows the

steel wire or needle to follow the curve of the spoon away from vital tissues.

Case report

At KFSH&RC, the spoon was first used to help in the closure of midline laparotomy incisions in hyperthermic intraperitoneal chemotherapy (HIPEC) procedures. Briefly, HIPEC is done along with cytoreductive surgery for advanced peritoneal malignancy. A heated chemotherapeutic solution is injected into the abdomen, either closed or open, and is kept for 30–90 minutes. The solution is then drained, and the abdomen closed [4]. As a result of this process the tissue becomes edematous, and therefore harder to suture close. The idea of using a spoon was then introduced, to help depress, and protect the underlying abdominal viscera, as well as guide the needle across along the curve of the spoon (Figs 1 and 2). The spoon used is a regular dinner spoon, which goes through the sterilization process, and is then added to the surgical kit. The benefits to the spoon include its simple shape, and its curved edge. The design makes it easy to handle and place in between layers needing suturing (Figs 1 and 2).

Discussion

The spoon has been used in other surgical cases at our center, to aid difficult closure, by providing a guide. It has been especially helpful in sternotomy closure, as no retainer is used under the

Received: November 1, 2023. **Revised:** November 29, 2023. **Accepted:** December 1, 2023

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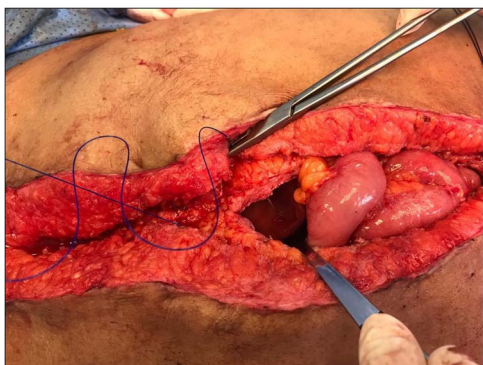


Figure 1. HIPEC- midline incision closure aided by spoon.

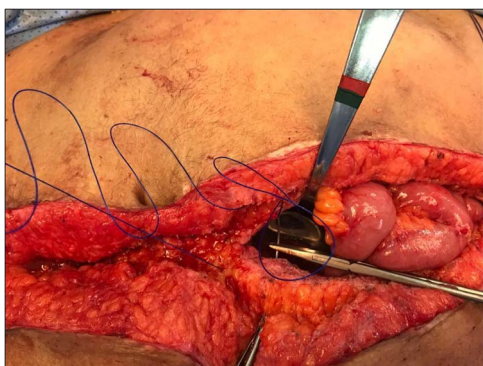


Figure 2. HIPEC- midline incision closure aided by spoon.

sternum. However, the spoon has its drawbacks. A spoon is not included in the average laparotomy instrument kit. They must be ordered by the operating physician prior. Additionally, spoons neither have a unified shape, in terms of width nor depth, a spoon is chosen based on preference and/or trial and error. Having no unified model may potentially lead to varying results based on the spoon used. The spoon handle is also not catered to surgeon use, which may reveal ergonomic issues in longer or tougher laparotomy closures. These factors may need to be studied further to help develop a well-rounded guide to surgeons looking to use a spoon in future surgeries.

Other tools used to close an abdomen are well known, such as the malleable or the fish glassman viscera retainer; they each have their own advantages and disadvantages.

A malleable ribbon retractor is a stainless steel, blunt blade that is used to retract the intestines in abdominal surgery. The retractor can be shaped to suit the area in which it is being used. The malleable retractor comes in a range of lengths and widths. Which makes it one of the more versatile surgical tools. The drawbacks to the malleable lie in its strength; malleability. Once shaped and reshaped after multiple uses, the malleable loses its original shape.

The Fish, Glassman viscera retainer was first created to protect underlying abdominal structures while closing the incision. The tool has three parts, the body, and a ring, attached by two pieces of string. The body is placed on top of the underlying viscera, below the incision. The string and ring are kept outside the abdomen as the incision is sutured. Once the incision is completely sutured, the ring is pulled, dragging the tool out, leaving nothing behind. The viscera retainer is a well-developed mass-produced tool, consistency in dimensions and material is guaranteed, compared to a common kitchen spoon. On the other hand, the viscera retainer strings may slip into the abdomen, making it harder to pull out.

Conflict of interest statement

None declared.

Funding

The authors used no financial support for the research, authorship, and/or publication of this article.

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