

Research Article

Simple, Easy and Accessible Way for Abdominal Adhesions Separation

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A method for hydraulically assisted separation of adhesions between organs and anatomical structures in the abdominal cavity in open operations is proposed. For this purpose, an injection of saline solution is applied at the site of adhesions, followed by their identification and release. Thus an anatomic, bloodless, and time-saving separation of adhesions is achieved.

Keywords: Adhesions; Hydraulic separation; Abdominal cavity

Introduction

If we use term “abdominal adhesion” in the surgery, they are generally associated with various forms of intestinal obstruction [1-5]. Formation of intra-abdominal adhesions is a common consequence of abdomino-pelvic surgery, radiation therapy, and inflammatory processes [6]. Adhesive small bowel obstruction represents accounts for about 49% of cases of small bowel obstruction according [1]. It is a common surgical emergency, causing high morbidity and even some mortality [7], as long-term complication occurs in up to one-third of postoperative patients and accounts for 1 million inpatient hospital days and \$2 billion in inpatient cost each year in the United States [8].

Adhesiolysis during abdominal surgery can cause iatrogenic organ injury, increased operative time and a more complicated convalescence. A 6-10% incidence of iatrogenic bowel injury during adhesiolysis is reported, increasing postoperative morbidity and mortality [9-11]. Bohnen JD et al in 9288 patients reported 183 intra operative adverse events, as 44% consisted of bowel or vessel (29%) injuries and were addressed intra operatively (92%). According to the same authors, they are independently associated with substantial increases in postoperative mortality, morbidity, and prolonged length of stay [12]. In 40 patients with severe adhesions Harris et al note mean duration of operation 6.2 hours, 36 of the 40 patients had a portion of their small bowel resected, 18 patients had one or more early postoperative complications [13]. This leads to increased attention among surgeons for such complications [14].

Recently I decided to check on a detail of my surgical performance in periodic medical literature. This is the application of a hydraulically assisted separation of the existing adhesions in the abdominal cavity. To my surprise, such a methodology has not been described.

Material and Method

About 35 years ago, assisting my colleague and teacher, surgeon and anatomist A. Gurovsky, I saw how he, in order to facilitate the atraumatic and safe disintegration of inter-organ adhesions, injected with a syringe saline solution in the appropriate place. Soon after, I began to routinely apply this method in my practice.

It has been used in patients with open abdominal operations, with varying extent and severity of adhesions. These were operations, both urgent and scheduled.

In case of adhesions, a syringe with a needle filled with warm saline solution is used, which means that it does not cause burning sensation when touched. The needle is initially inserted into a few millimeters and the solution is injected to the extent that a collection is accumulated allowing a clear separation of the anatomical structures from one another. This allows the needle to be inserted deeper and another solution to be introduced.

Depending on the adhesion density, the pressure applied to the solution may require greater pressure on the syringe plunger. The volume of liquid introduced depends on the space and nature of the adhesions. The dissection itself is best done with a long, thin scissors with sharp tips. Blunt dissection can also be applied.

In dense adhesions, after the introduction of the liquid, wait, applying a gentle pressure on the infiltrated with saline area. Thus, the liquid penetrates into the dense tissue and provides visual marking of the structures in the secure dissection plan.

In this way step by step the separation of the adhesions and the presentation of the desired anatomical structures or organs in the abdominal cavity is obtained.

The methodology described has not been the subject of targeted studies as well as collection of data for statistical analysis.

Results and Discussion

The method has provided an anatomical, atraumatic and bloodless dissection into the desired plan. It is applied to adhesions separation of a different nature.

The hydraulic adhesion preparation has also helped for a smoother and less complicated post-operative period. At the same time, with the efficiency it provides shortening the time of the operation.

There are no complications related to the method. Something more, it has avoided intra-operative complications that would almost certainly have happened.

Because of the auxiliary nature of the method, it cannot influence a number of factors related to the underlying disease and its effect on the outcome of the operative treatment. Moreover, due to the variety of processes leading to adhesions in the abdominal cavity and their varying extent and character, statistical data processing and patient

randomization would hardly give a clear answer.

V.V. Skiba et al applied a stream hydroscalpel for the separation of adhesions [15]. They reported a gentle non-traumatic effect on blood vessels and the intestinal wall in the separation of adhesions and infiltrates. By this way it was possible to minimize blood loss, to prevent damage to anatomical structures and to reduce the time of the surgery [15]. When I used such a device, I have had the opportunity to be convinced that it not yields more efficiency, ease of use, and clarity compared with the described method of hydraulically assisted dissection. The hydroscalpel separates with a hydraulic jet, whereas injected saline acts as an expander and creates a dissection plan.

The introduction of laparoscopic methods for operations in the abdominal cavity has forced them to comply with the available adhesions, which limits their application. When simple adhesive small bowel obstruction needs operative treatment, a laparoscopic approach may be beneficial for selected cases [7,16,17]. Ho Di Saverio et al. Stated that laparoscopic adhesiolysis is not for all patients, not for all surgeons, not in all centres [18].

Can the method of hydraulic dissection find a place in laparoscopic adhesiolysis? In developing of abdominal cavity-specific instruments or devices for saline injection, this would have a positive effect on overcoming of more pronounced adhesions with this methodology.

In the world of modern medicine, we are accustomed to dealing with models of evidence [19]. But the same author notes: "The next time that you are having coffee in the surgeon's lounge and someone comes up with what sounds like a good idea, think about the basic science support and the "best available" evidence to support or refute your clinical approach. This is the process that leads to better research, better manuscripts, and ultimately, better medicine" [19].

Conclusion

The method of hydraulic saline dissection of the dense adhesions is simple, easy and accessible way for abdominal adhesions separation.

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