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Gelatin Sponge Induced Adhesive Intestinal Obstruction Following a Gynaecologic Operation (Case Report and Review of Literature)

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ABSTRACT

Early postoperative adhesive intestinal obstruction in the first week following a gynaecologic operation is an uncommon problem. Haemostatic sponges can give rise to this condition. Extensive dissection leads to bleeding and extensive deperitonealised surfaces predisposing to adhesion formation. Acute adhesive intestinal obstruction caused by inflammatory adhesions induced by haemostatic gelatin sponge necessitating exploratory laparotomy is presented. The pathophysiologic mechanisms of haemostatic gelatin sponges are discussed. Gelatin sponges can induce dense adhesions. It is best to avoid their use in gynaecologic pelvic surgery.

Keywords: *Gelatin, sponge, adhesive, intestinal obstruction, gynaecologic, surgery*

INTRODUCTION

Abdominal hysterectomy is one of the commonest gynaecologic operations performed. Uterine myomas or previous caesarean operations render the hysterectomy operation technically more demanding. This leads to increased morbidity by way of complications. Bleeding is one of the important complications followed by adhesive

intestinal obstruction. Gelatin sponge which is used as a topical haemostatic agent leading to adhesive intestinal obstruction is extremely rare. A case of adhesive intestinal obstruction following the use of gelatin sponges during an abdominal hysterectomy necessitating exploratory laparotomy is presented along with a brief review of literature.

CASE REPORT

A 45 year old lady underwent abdominal hysterectomy for multiple uterine myomas. Oral feeds were commenced on the third postoperative day. She subsequently developed abdominal distension followed by vomiting on the fourth postoperative day. She was then referred to the surgical facility on the fourth post-operative day. On examination her vitals were altered. Her pulse rate was 100 beats per minute. She was dehydrated. Blood pressure and body temperature were within normal limits. Physical examination revealed grossly distended abdomen. There was diffuse tenderness. However rebound tenderness, guarding or rigidity was absent. Bowel sounds were absent on auscultation. The dressing given by the attending gynaecologist was opened to examine the surgical site wound. There was no evidence of redness or any discharge. An abdominal x ray in standing position revealed multiple air fluid levels. Hematologic investigations did not reveal any abnormality. Conservative treatment was commenced in view of features suggestive of acute intestinal obstruction. However the response to treatment was suboptimal. A CT scan was then done on the fifth postoperative day. It revealed multiple distended small bowel loops predominantly in the pelvis accompanied by a localized collection in the pelvis. In view of poor response to a trial of conservative treatment and the CT scan findings the patient underwent an exploratory laparotomy on seventh postoperative day.

Exploration revealed 2 loops of small bowel densely stuck to the suture line of the uterine stump. The adhesions were dense and had to be separated with careful sharp dissection. As the dissection came through it was observed that the bowel loop was densely adherent to an inflammatory mass. This mass was overlying the suture line. The mass was separated from the uterine suture line. The mass contained a partially disintegrated piece of gelatin sponge placed at the time of the hysterectomy to control oozing from the suture line. Serosal tears were caused by adhesiolysis. (Figure 1) The uterine suture line was intact with no significant oozing. The entire length of the small intestine was explored to look for any additional adhesions in between the loops. The postoperative course of the patient was uneventful. Histopathological examination of the mass showed inflammatory cell interspersed with fibrinous bands.

DISCUSSION

Gynaecologic pelvic surgery is invariably associated with adhesion formation. The incidence is directly linked to the technical difficulty at the time of dissection by virtue of a gross pathology like multiple myomas or by adhesions caused by previous surgeries like caesarean operations. Extensive raw areas created at the time of surgery predisposes to adhesions. In upper abdominal surgery the omentum provides a great relief as it gets stuck initially. Omental adhesions are short lived and eventually disappear. The length of omentum many a times does not suffice to reach

the pelvis. As a result the protective effect of omentum cannot be availed of by the deeply placed pelvic organs such as the uterus. Small bowel loops tend to gravitate down into the pelvis with adhesions developing with the dissected deperitonealised areas.

These adhesions may be temporary at times but in some cases may persist and become densely fibrotic. [1] Presence of foreign materials in region may predispose to a more severe inflammatory reaction as in the case presented. Haemostatic sponges are commonly used to prevent oozing surfaces of solid organs. Oxidised cellulose and gelatin sponges are the most commonly used products. In the case presented gelatin sponge or gel foam was used to cover the suture line as per the operative notes which was then confirmed intraoperatively at laparotomy.

Gelatin sponge is a water soluble porous product prepared from processed and purified porcine skin which is able to hold blood and fluid within its interstices. It exerts its haemostatic action by its physical properties rather than altering the clotting mechanism locally. The effect is due to release of thromboplastin from damaged platelets interacting with prothrombin and calcium to form thrombin in its interstices to produce a clot. Thrombin converts fibrinogen to fibrin. The spongy physical properties aid fibrin deposition thus providing structural support to the clot. The clot then liquefies within a week under the effects of products released by the fibrinolytic system. It completely disappears within four to six weeks. Excessive use of gel foam can lead to an

exuberant inflammatory reaction.[2] This coupled with hypovolemia may lead to persistence of the fibrin coagulum due to paucity of effective fibrinolysis. This fibrin mass may serve as a nidus for more dense adhesions to form. Once bowel loops get adherent to the mass, it can lead to features of adhesive intestinal obstruction. In the case presented the inflammatory reaction seems to be an abnormally exuberant inflammatory reaction caused either by excessive use of the gelatin sponge or an abnormal body reaction to the product. Gelatin granules swell as they absorb fluid while the fibrin monomers polymerise along the surface leading to conversion of fibrinogen to fibrin. These fibrin bridges are most dense with gelatin products as compared to other products such as oxidised cellulose. Studies on animal models have revealed that peritoneal adhesions are significantly more with gelatin sponges as compared to other products. [3]

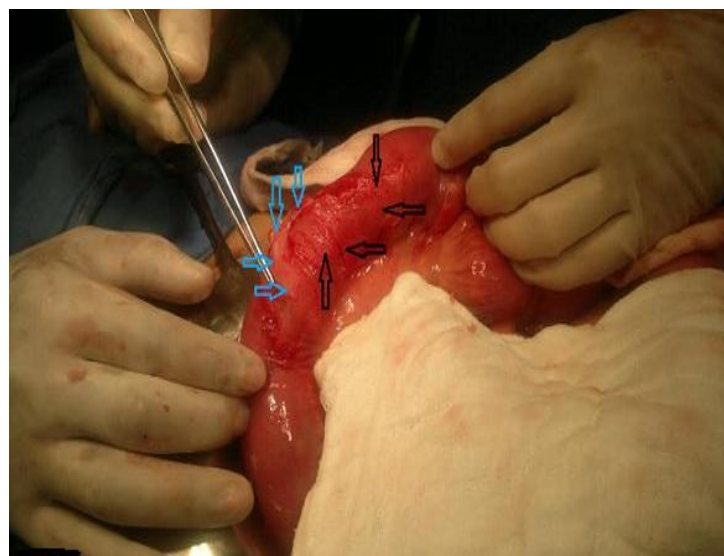


Figure 1- Intraoperative photograph showing adhesions of the gelatin sponge piece to the small bowel marked by blue arrows and severe serosal injury after adhesiolysis marked by black arrows

CONCLUSION

A high index of suspicion for gelatin sponge induced adhesions should be exercised when confronted with features of adhesive intestinal obstruction in the early postoperative period especially following pelvic gynaecologic procedures where such haemostatic sponges have been used.

It is safer to avoid using gelatin sponges in areas where the bowel loops can get exposed to them.

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