

Some benefits of concomitant management of abdominal wall defects with the cesarean delivery in pregnant patients

- therapeutical algorithm proposal -

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*"If we could
artificially produce
tissue of the density
and toughness of
fascia and tendon,
the secret of the
radical cure of the
hernia repair would
be discovered."*

Theodore Bilroth,
1857

Abstract

Objective: The possibility of establishing an simultaneous therapeutical approach , through anatomical and clinical corelations, combining cesarean delivery and hernia repair in an pregnant patient has arisen while trying to address the subject of uncomplicated hernia repair in pregnancy. **Methods:** Medical records of 21 patients treated in Saint Pantelimon Emergency Hospital were retrospectively reviewed, data taken between 2002-2008 and containing clinical, anatomical and laboratory relevant findings. **Results:** In this study, of the 21 uncomplicated cases operated, 16 (76, 19%) were inguinal hernias, and 6 were umbilical hernias; The surgical approach used the same anesthetical moment with the cesarean delivery and relied on the tension-free mesh technique that is used currently in major clinical surgery hospitals. The cases were more frequent toward the third decade of age, with an good postoperative evolution and almost no complications (low morbidity). There were no relevant connections between the patient origins and residency (urban/rural) and the abdominal wall defects. **Conclusions:** The therapeutical algorithm - combining the two surgical moments, cesarean section and hernia repair under the same anesthetic "umbrella"; simple and efficient, may propose an solution for all cases of delivery associated with uncomplicated hernias, hernias that need to be addressed in order to avoid further possible evolutive complications.

Keywords: hernia in pregnancy, therapeutic algorithm, concomitant cesarean delivery and mesh herniorraphy

Introduction

The presence of both pregnancy and abdominal wall defects were reported in the last 7 years, based on an recent review at the St Pantelimon Emergency Hospital. The pre-existent or newly developed abdominal wall defects enlarge progressively throughout the pregnancy, the general surgical management for these conditions being similar to the classic hernia management. The interdisciplinary Gynecological - Surgical consult had to balance the risks of hernia complications with the risks of anesthesia in a pregnant woman, and it required a solution to the issue that this mixed condition does not represent an emergency in most cases. The conservative management of the

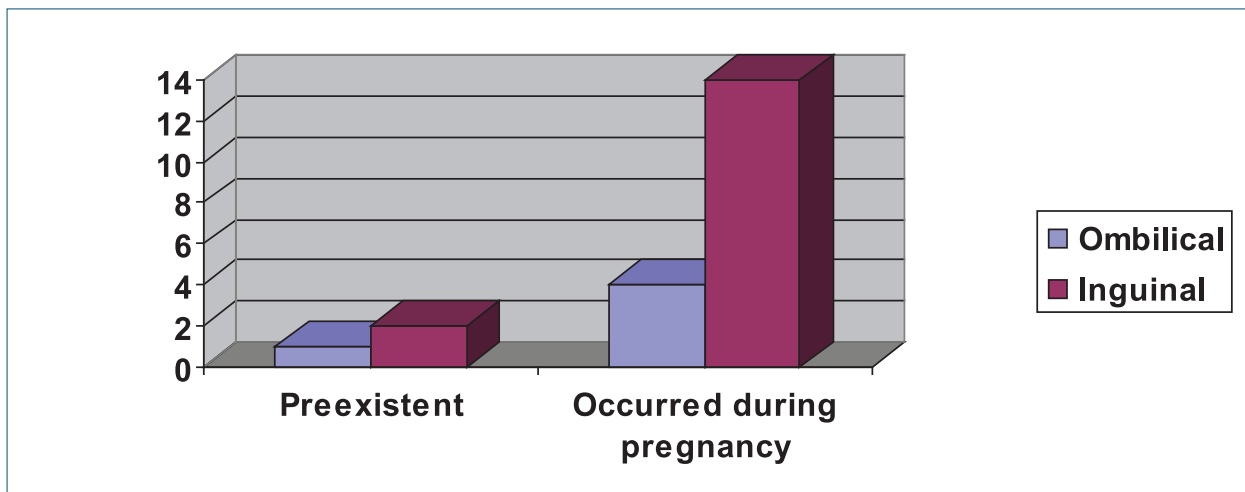
hernia is usually preferred and the surgical intervention is usually postponed until delivery or after delivery. In patients that had a cesarean delivery, the option to address the hernia at the same time with the c-section was considered. Postponing the hernia management for a later moment has the disadvantage of a new anesthetic-surgical stress for the patient, and the fact that the intervention also needs to not overlap with the afterbirth period, an important physiologic period.

Materials and methods

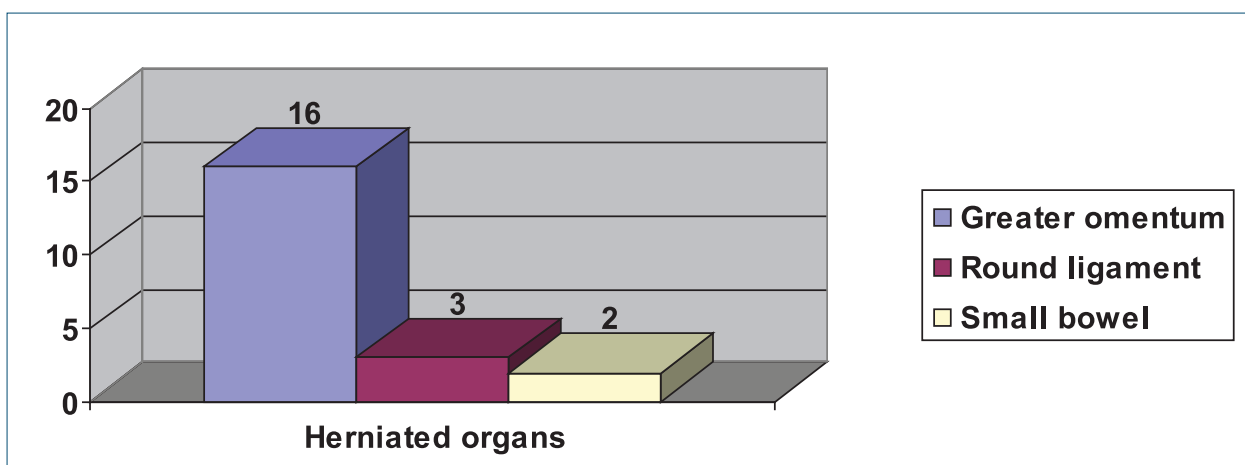
The present article reveals a retrospective study of a group of 21 pregnant patients with inguinal or ombili-

cal hernias, subjected to a surgical intervention in "St. Pantelimon" Emergency University Hospital, at the same time with the caesarean-section, during the period of 2002-2008. The group included 16 inguinal hernias and 5 ombilical hernia. The present study is a retrospective observational study, including collection of the clinical progress notes, surgical protocol documentation and the

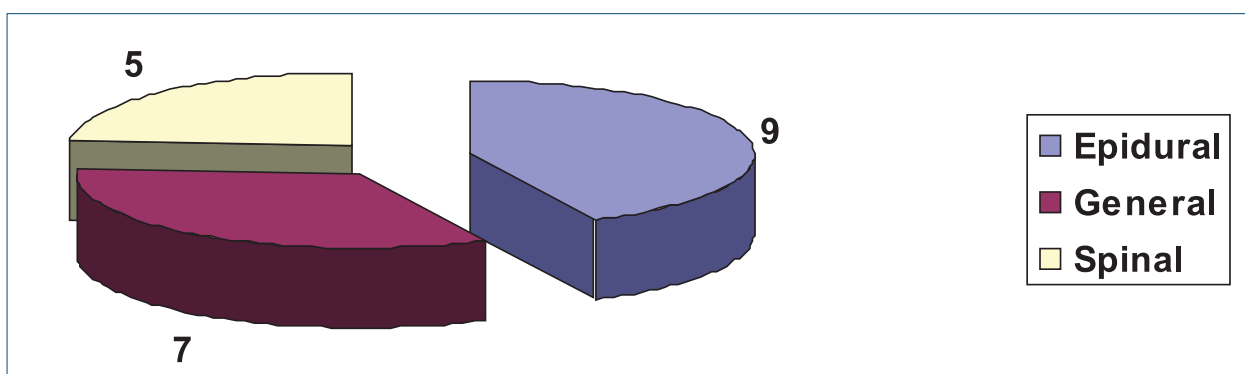
medical records from the hospital medical records database. The inclusion criteria were: pregnant patient with C-section delivery at the Ob-Gyn clinic of the St Patelimon Emergency University Hospital, during the period of January 2002 - December 2008. During this intervention, a general surgery team performed also the abdominal wall defect management.



Graphic 1.
Hernia types
at patients
included
in study



Graphic 2.
Frequency
of herniated
organs



Graphic 3.
Types
of anesthesia

Results and discussion

The analysis of the medical records for the patients included in the study group revealed the anamnestic presence of the inguinal or the umbilical hernia previous to pregnancy, in only 3 cases; in other cases the hernia developed during the pregnancy. The most significant physiopathological factors that favour the development of the hernia include weight

excess, physical exercise, the increase in abdominal pressure, the physiologic changes in the tissues during pregnancy, the pelvic static changes and the presence of constipation secondary to pregnancy. The common evolution of the patients justifies the conservative management of the hernia during the pregnancy, with watchful surveillance and surgical management postpartum.

The international literature discloses the fact that elective postpartum therapy for hernia has similar results with the hernia therapy in the rest of the population, with the surgical intervention in a 4-52 weeks postpartum period (with an average of 22 weeks). The main notable difference with our study appears in the way the hernia is managed and the moment when this is done, the intervention for the analysed cases in our study managing to synchronize the herniorraphy intervention with the caesarean section, taking into consideration the advantage of a single anesthetic moment (spinal anesthesia, epidural anesthesia or general anesthesia with oro-tracheal intubation).

The age of the patients was between 24-35 years, with an average of 28.4 years, 14 patients coming from an urban environment and 7 from a rural environment. There was no recorded evidence of pregnancy affected by the hernia in its course. The C-section intervention was Pfannenstiel type in 20 cases, a subumbilical median incision in one case, and this allowed each time the concurrent repair of the abdominal wall defect using the same incision, a worthwhile advantage. The content of the hernial sac was in 16 cases (76%) represented by the greater omentum, the round ligament in 3 cases (14%) and small bowel in 2 cases (10%). These cases, covering a 7 years period, were selected based on an important criterion: non-complicated hernia (incarceration, strangulation) over the entire duration of the pregnancy.

The anesthesia type used was in 9 cases (42.8%) epidural anesthesia, in 5 cases (23.8%) spinal anesthesia and general oro-tracheal intubation in 7 cases (33.3%) (graphic 3).

The synthetic materials used were polypropylene single strand mesh - the standard type, Marlex and the lightweight type (lightweight type - low weight), as expressed in g/m^2 (figure 1), in all cases of inguinal hernia and in patients with umbilical hernia, with retromuscular position tip Rives - Stoppa in 8 cases and for the rest of the group pre-fascial alloplasty or Lichtenstein alloplasty, by using unresorbable monofilaments materials. In most of the cases (18 cases - 85,7%), the synthetic mesh was tailored out of a larger segment. In three cases ready made meshes were used (figure 2).

The length of the procedure was approx. 12-40 minutes, with an average duration of 27 minutes. This means that there was no significant increase in the duration of the global surgical intervention time, realised by 2 surgical teams. The general surgery team came into the operating field immediately after the extraction of the baby. The parietal repair - herniorraphy and alloplasty followed the same steps. No intra-operative complications were recorded and the postoperative complications were represented in 2 cases by subcutaneous seroma and in 1 case a hematoma, which were easily managed.

The postoperative therapy required in 17 cases a double dose of antibiotic (monotherapy with a single large spectrum antibiotic), covering 24 hours. In 3 cases, the patients received also abdominal dressings, on a period of several days.

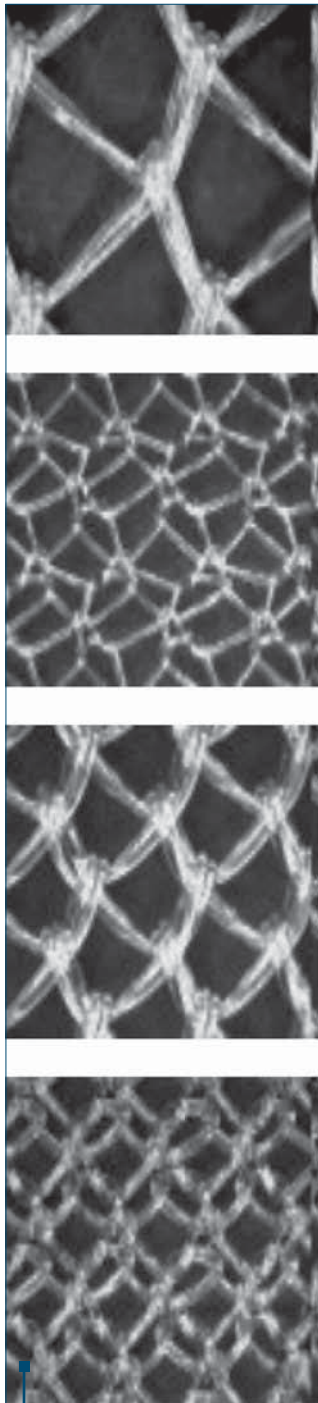


Figure 1. Structures of polypropylene mesh



Figure 2. Pre-shaped mesh

Circumferential abdominal dressing, a classic management for large abdominal wall defects, does not have a recognised role and is not backed by statistical significant evidence based knowledge. The associated results were good, probably determined by the decrease in abdominal tension at the site of the surgical intervention and by decreasing the risk of the post-operative seroma formation, thus allowing an efficient internal pressional drainage.

The alloplasty required a post-operative extra-abdominal drainage in most of the cases, that was kept in place between 24 hours and 4 days. Postoperative follow-up was performed by an interdisciplinary approach together with the ob-gyn team, in some situations the patients being monitored for up to 3 years. In 3 cases, the patients had a second term pregnancy, without relevant abdominal wall complications. The delivery was performed also with a C-Section, due to increased uterine rupture risk.

The lower frequency of the hernia complications did not represent a surprise. The enlarged pregnant uterus ensures the protection of the internal organs against herniation during pregnancy. Also, the effect of hernias on delivery appeared to be minimal, if nonexistent. In an inquire of the medical literature, one can discover there are no surgical indications against intrapartum elective hernia management. However, there existed a small setback: that when the cervix is dilated or the amniotic membrane is ruptured, the operation can become an contaminated case and a prosthesis may not usually be recommended; also, this repair may require extensive dissection in the preperitoneal space which, during a caesarean section, due to the pelvic high blood-flow state, can be associated with excessive bleeding or oozing, possibly leading to a higher incidence of hematoma, seroma, or infection. In our study, none of the known post-operative complications of the mesh hernia treatment were found; that is, no local chronic pain with discomfort or foreign body sensation, fibrosation or excessive rigidity with inflammation of the neighbouring nerve structures, tissues, entero-cutaneous fistulas or mesh infection were reported. The long term negative effect of the quality of life for the patients of any of these complications is remarkable, and the conjugated effect of the medical personal and of the manufacturers is being directioned toward decreasing the frequency of such occurrences. The benefits of using a mesh are outstanding, the recurrence rate being significantly decreased (recurrences invariably occurs at the mesh margin). Although mesh repair has higher material costs compared to primary closure, bridging the hernia defect with a prosthetic enables a tension-free repair, which should reduce recurrence,

Table 1

Ideal protetic meshes decalogue (Cumberland și Scales)

No physical alteration by host tissue (contraction)
Nondegradable
Durable tensile strenght
Noncarcinogenic
Hypoallergenic
Effective tissue ingrowth without excessive inflammation
Resistance to infection
Ease of handling
Cost effectiveness
Compliance

*Cumberland, Scales 1952-1953, revised by Hammer-Hodges, Scott

lessen pain, speed recovery, and ultimately yield lower overall costs. The features of an ideal mesh have been summarized in a decalogue (table 1).

Conclusions

1. Solving uncomplicated hernias (reducible) in pregnancy is to be avoided, being preferred the conservative attitude. Patient's follow-up being sufficient for monitoring.

2. Parietal surgical cure defects during the same intervention with caesarean section has the advantage for the patient of avoiding other surgical intervention and anaesthetical stress.

3. Alloplastic procedures are the most indicated, the incidence of complications was low, similar to existing data in multicentre studies on cure hernias.

4. Relapse after these processes are extremely low in international reporting, which was set up as an additional criterion selectibilitate.

5. The present study requires collection of a lot of statistically significant, and comparison with any existing studies internationally. However, literature data is scarce in terms of hernias therapy in pregnant women, so this study is constituted not only as an argument in supporting the optimal interventional moment but as a support of continuing other multi-center studies for obtaining statistically significant results that could allow a standardized treatment protocol. ■

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