

## The Modified Rives's Technic in The Giant Eventration Cure: A Clinical Observation and Literature Review

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### ABSTRACT

**Introduction:** *In the treatment of incisional hernia, the use of implant reinforcement is consensual. Many techniques, including that of Rives, differ depending on the implant's position. Peri-operative difficulties sometimes lead the surgeon to make modifications compared to the original technics.*

*Through this case operated at the Visceral Surgery Service of the University Hospital Center of Libreville in Gabon, the authors propose to revisit the Rives's technic in the treatment of giant incisional hernia.*

**Patient and Observation:** *Mr. MBJ, 45, consulted for a voluminous anterior abdominal bulge evolving for 10 months. There was a midline laparotomy indicated for peritonitis, 3 years prior. A supra-umbilical incisional hernia was one of the long-term complications. The first surgical repair using the autoplasty of Mayo occurred 1 year ago. The abdominal bulge had gradually reappeared 4 months after the intervention. The diagnosis of giant eventration was retained. Preoperative physiotherapy was instituted. Intraoperatively, visceral and epiploic adhesions to the wall were resected. A macroporous polypropylene prosthesis was placed according to the Rives method with a technical variant, followed by planar parietal closure without drainage and a hernia belt was placed. The abdominal compression garment was prescribed for 2 months.*

**Conclusion:** *Giant incisional hernia cause inconvenience. Their treatment is based on prosthetic surgery. The Rives technic presents satisfactory results. It may be subject to technical modifications in practice.*

### Keywords

Incisional hernia, Rives technique, Prosthesis.

### Introduction

The post-operative or incisional hernia is defined as a solution of musculo-aponeurotic continuity of the abdominal wall secondary to surgical intervention [1]. It is a complication frequently found after laparotomies. In the treatment of eventrations, the use of a reinforcing implant is consensual [2] and has become the gold standard. Many techniques, including that of Rives, exist and differ depending on the site of implantation of the prosthesis [3]. Peri-operative difficulties sometimes lead the surgeon to make modifications compared to the original techniques.

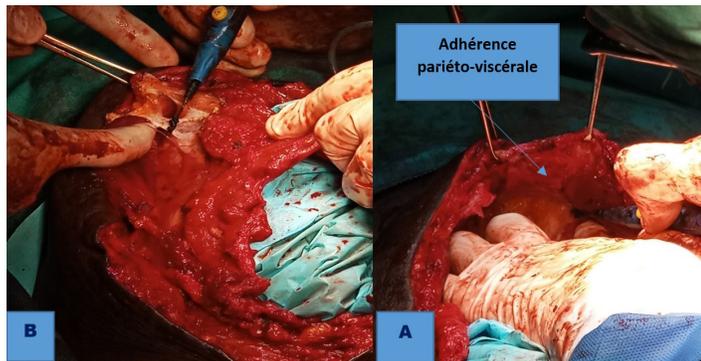
Through this case report of a patient operated at the Visceral Surgery Service of the University Hospital Center of Libreville in Gabon, the authors propose to revisit the Rives technique in the treatment of giant eventration.

### Patient and Observation

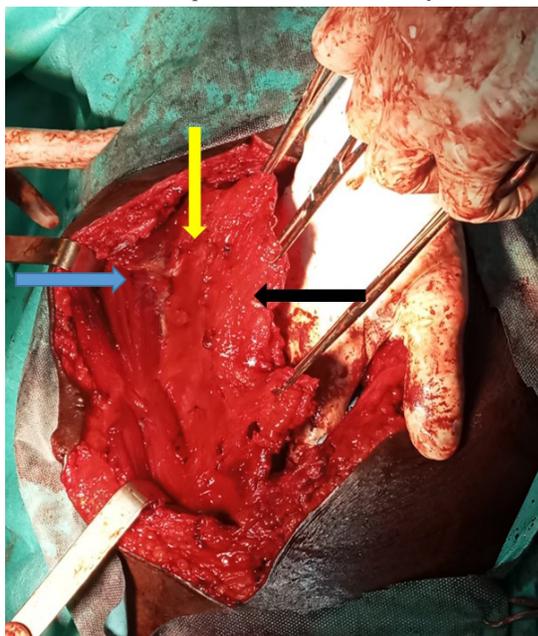
Mr. MBJ, 45 years old, security guard, had consulted for a voluminous bulge of the anterior abdominal region evolving for about 10 months. This caused a disruption of his professional activity due to intermittent pain and unaesthetically deformation and the use of a compression garment.

In his past surgical history, there was a median laparotomy with appendectomy and drainage indicated for an appendicular

peritonitis 3 years prior. The post-operative care was complicated by the occurrence of a supra-umbilical eventration, for which he underwent a Mayo autoplasty. The abdominal bulge gradually reappeared 4 months after that surgery. The clinical examination objectified a soft, painless bulge protruding when standing and which reintegrated intra abdominally in the supine position. The parietal defect was 25 cm long median axis straddling the umbilicus. The rest of the exam was normal. The diagnosis of giant eventration was agreed upon and the surgical indication was made. The use of a semi rigid hernia belt as well as respiratory physiotherapy sessions were recommended for 10 days before the intervention was scheduled. Intraoperatively, under general anesthesia and orotracheal intubation, an elliptical skin incision was made, encompassing the old midline scar and overlapping the umbilicus. The dissection set out to keep as much peritoneal tissue as possible. There were visceral and omental adhesions to the abdominal wall (Figure 1A). A careful adhesiolysis was carried out with a monopolar electric cautery (Figure 1B). Then we proceeded to open the posterior leaflet of the sheath of the rectus abdominis muscle, still attached and in continuity with the peritoneum, carefully reclining the muscle (Figure 2).



**Figure 1 A:** Per-operative view. Adhesiolysis between the peritoneum (peritoneal sac) and the subcutaneous tissue with an electric scalpel; **B:** Per-operative view. Manual parieto-visceral adhesiolysis.

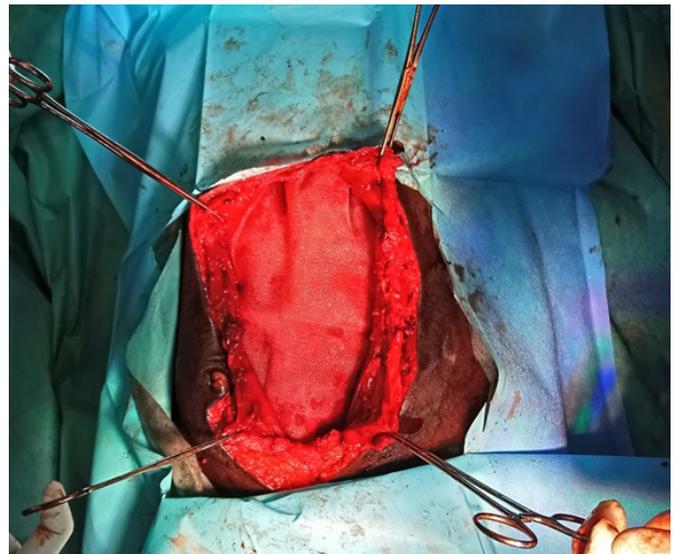


**Figure 2:** Per-operative view. Preparation of the pre-fascio-peritoneal retro-muscular space after incision of the posterior leaflet (fascia) of the sheath of the right rectus muscle. Note the peritoneum (black arrow) which is in continuity with the posterior fascia (yellow arrow) of the sheath of the great right muscle (blue arrow) which is reclined.

We made the same gesture on the left side. This maneuver allowed us to gain tissue in order to be able to perform the peritoneal closure easily (Figures 3A and B) and thus creating a "pre-fascio-peritoneal" plane. The macroporous polypropylene prosthesis was thus placed and sutured using Prolene 2/0 without tension by transfixing ligatures, in this space "pre-fascio-peritoneal" in retro-muscular position, avoiding the vascular-nervous bundles (Figure 4).



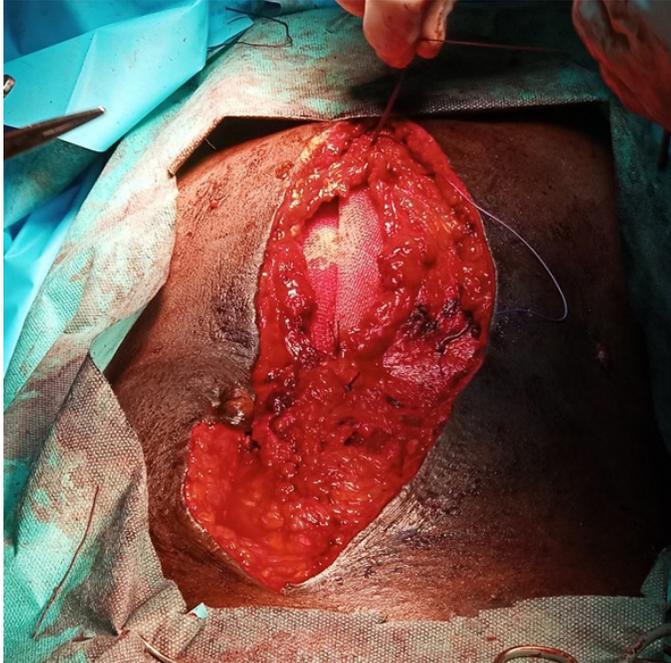
**Figure 3A:** Per-operative view. Closure of the peritoneum with an overlock, thus creating a continuous posterior retro-muscular pre-fascio-peritoneal plane; **B:** Per-operative view. Peritoneal closure completed (Preparation of the posterior retromuscular pre-fascio-peritoneal plan).



**Figure 4:** Per-operative view. Positioning of the tension-free prosthesis in the posterior pre-fascio-peritoneal retro-muscular position.

The linea alba was closed after hemostasis was verified, by suturing the edges of the anterior sheaths of the left and right rectus muscles using a simple continuous stitch with Vicryl 2 suture (Figure 5). The parietal closure was achieved plane by plane all the way up

to the skin without drainage. An elastic abdominal compression made with a Tensoplast \* band protected the wound dressing. The patient gradually resumed a normal diet the following day. The dressing change was done every 3 days until complete healing after 16 days. The abdominal compression garment was recommended for 2 months.



**Figure 5:** Per-operative view. Closure of the median white line by 2 hemioverlockings burying and thus protecting the prosthesis.

## Discussion

Depending on the studies, eventrations are postoperative complications found in 5 to 11% of laparotomies [4]. Indeed, they have a significant impact on health care and costs [5]. The socio-professional disadvantages caused by this condition also impact the patient's daily life.

## Classification

Chevrel [6] made it possible to classify them according to the size of the major axis of the parietal dehiscence, in small (less than 5 cm), large (between 5 and 10 cm), very large (between 10 and 15 cm) and huge or giant (greater than 15 cm). Our patient thus presented a giant disruption, which poses a real technical problem with regards to the resulting musculo-aponeurotic retraction. In 2010, the Ventral Hernia Working Group proposed a 4-group repartition according to the presence of comorbidity and the degree of wall contamination [7].

## Choice

In the event of recurrence, it is not recommended to reuse the same technique. We therefore opted for prosthetic surgery because the patient had already undergone an autoplasty using Mayo's technique. Prosthetic parietoplasty tends to become the reference method for any eventration, regardless of the size. Our preference went to the Rives technique because of the satisfactory results

found in this indication by other authors [8,9]. This technique consists of an open procedure with positioning of a prosthesis in the pre-fascial retro-muscular position [8]. The laparoscopic approach, which has become the gold standard for certain surgical teams [3], is not yet popular in our country. However, it must be reserved for non-recurrent eventrations in order to avoid the risk of iatrogenic visceral trauma [3]. Lack of practice and equipment prevents us from exploring this approach at the moment.

## Technical

The skin incision must be economical. The dissection between the sac and subcutaneous tissue must be done with caution. As in our practice, the economy of the peritoneal tissue is fundamental because it will allow for closure of the the fascio-peritoneal plane on which the prosthesis is placed, in the event of a large defect. This closure is sometimes made difficult by the musculo-aponeurotic retraction during the eventration. Given the impossibility of bringing the 2 right and left posterior layers of the abdominal rectus muscles on the midline due to the muscular retraction, we opted for a dissection leaving the posterior fascia and the peritoneum. It allowed us to have significant tissue to fill the loss of substance and thus create a continuous posterior retro-muscular-pre-fascio-peritoneal and non-retro-muscular pre-fascial posterior plane as indicated in the original technique from Rives. Some authors have opted to close the loss of posterior substance using a prosthetic patch [3]. In these cases, some authors recommend the use of a two-sided prosthesis associated with a fascial plasty [10].

It is not recommended to put a non-absorbable Polypropylene prosthesis in direct contact with the bowels, as this could be the cause of adhesion that can cause occlusions, or even digestive fistula [11]. The deep retro-muscular pre-fascial implantation of the prosthesis in the Rives technique allows a better protection of the prosthesis against infections, compared to other more superficial implantation sites [3]. In our case, the continuous pre-fascio-peritoneal retro-muscular closure is located between the prosthesis and the intra-abdominal content. The prosthesis thus placed is less superficially and is therefore less exposed because in the event of infection, the removal of the prosthesis is required [5].

The use of non-absorbable prosthesis ensures better strength of the prosthetic repair [12]. The use of slow-absorbing sutures is recommended for the stability of the prosthesis over time. The degradation of the sutures before the colonization and scarring phase can be the cause of a secondary accidental mobilization of the prosthesis. Some authors opt for an installation without fixation [9]. The prosthesis must be positioned without tension, as in our observation, in order to avoid strong pulls on the fixation points.

## Evolution

Complications like seroma or hematoma are to be feared despite the drainage. These two entities are risk factors for infections, the other notable complication of prosthetic surgery [12]. The thoroughness of the hemostasis allowed us to dispense with the use of a Redon drain. The role of the elastic abdominal compression is undoubtedly not negligible in our observation, because it applies

constant external pressure and therefore to reduce the spaces created by surgical dissections.

In the absence of a prosthesis, there is up to 50% recurrence post-surgical risk [13]. Recurrence is less than 10% after non-absorbable prosthetic reinforcement [9]. Oropeza et al did not record any recurrence after prosthetic treatment using the Rives technique [14]. Apart from recurrence, a long-term complication of the eventration cure deserves to be noted: it is the disinsertion and intra-visceral migration of the prosthetic material [15].

### Conclusion

Giant eventrations are the source of many inconveniences. Currently, their treatment is based on prosthetic surgery. The Rives technique is an effective and safe method in the parietal repair of giant eventrations. It offers satisfactory results and may be subject to technical modifications in practice.

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