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Late Results and Quality of Life after Rives-Stoppa Repair for Incisional Hernias: A Prospective Clinical Study

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Rezumat

Rezultate tardive și calitatea vieții după tratamentul protetic al herniilor incizionale prin tehnica Rives-Stoppa: studiu clinic prospectiv

Introducere: utilizarea protezelor în tratamentul herniei incizionale (HI) a redus drastic rata de recidivă dar a ridicat numărul şi incidența complicațiilor asociate. Studiul raportează rezultatele unei serii consecutive de pacienți cu HI operați prin protezare retromusculară şi are drept obiectiv evaluarea complicațiilor precoce şi tardive asociate tehnicii.
Material şi metodă: au fost evaluați 275 pacienți operați între 2002 şi 2006. În 2007 şi 2009 au fost reevaluați prin examen direct şi chestionar.
Rezultate: 171 pacienți au răspuns în 2007 şi 148 în 2009. Au fost examinați direct 143, respectiv 118 pacienți. Rata de recidivă 6,7%. Rata de confort – bună şi foarte bună la 58%
Concluzii: rezultate comparabile cu cele din literatură.

Cuvinte cheie: protezare retromusculară, complicații post-operatorii, calitatea vieții

Abstract

Background: the prosthetic repair of incisional hernias drastically reduced the incidence of recurrence, but increased the associated morbidity. We report a consecutive series of patients with incisional hernias operated by Rives – Stoppa procedure. The aim is to identify the early and late complications associated with the procedure.
Material and methods: 275 patients admitted and operated on between 2002-2006 were prospectively evaluated by direct examination and questionnaire.
Results: 171 responded in 2007 and 148 in 2009; direct examination was obtained 143 and 118 patients respectively. Recurrence rate 6.7%. Good and very good comfort rates in 58%. *Conclusions:* similar results with the expert centre

Key words: retromuscular prosthesis, postoperative complications, quality of life

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Background

Incisional hernia still remains an important complication of laparotomies with an estimated incidence between 10% and 15% of cases (1-4). Reported results of surgical treatment are also variable, with high recurrence rates for non-prosthetic repairs (1,5-9). The use of prosthetic materials has improved these results steadily but surely. The placement of the prosthesis is still a matter of debate. In some circumstances it is associated with a high incidence of complications (infections, seromas, intestinal fistulas) (10-14). In the last few years the Rives–Stoppa procedure is associated with the gold standard therapy for incisional hernias (14,15). This

study reports the results of a prospective consecutive series of incisional hernias operated by Rives – Stoppa procedure. The primary endpoint was recurrence rate analysis and evaluation of complications rates, and the secondary one – patient assessment of quality of life long term after surgery

Material and Methods

Between January 2002 - December 2006, in the General Surgery Department of The Emergency Military Hospital Cluj-Napoca 302 patients were admitted with primary and recurrent incisional hernias with a relatively constant yearly distribution (*Fig. 1*).

Surgical technique

After dissection of the peritoneal sac, the rectus abdominis sheath was incised along the defect and the retromuscular space was opened. The abdominal wall defect was evaluated in centimeters in its largest diameter. The posterior rectus sheath and the remaining peritoneum were sutured with Prolene 1™ running suture. Polypropylene prosthesis was fitted in order to exceed the edges of the defect at least 5 cm in all directions. If the defect was too large and the standard prosthesis was not enough, it was customed for the appropriate size. The mesh was fixed with transparietal separate nonabsorbable Prolene 1™ stiches all around the defect. The anterior rectus sheath was sutured with Prolene 1™ in a continuous manner. In most cases the relaxing incisions in the sheath where mandatory for closing it without tension. If the suture could not be performed without tension, the edges of the anterior rectus sheath were set in a continuous manner to the prosthesis with a Prolene 1™ thread (*Fig. 2-4*). As a routine practice we do not perform adjacent gastrointestinal concurrent operations.

Quality of life assessment

The questionnaire was created according to a personal design according to the parameters presented in *Table 1*.

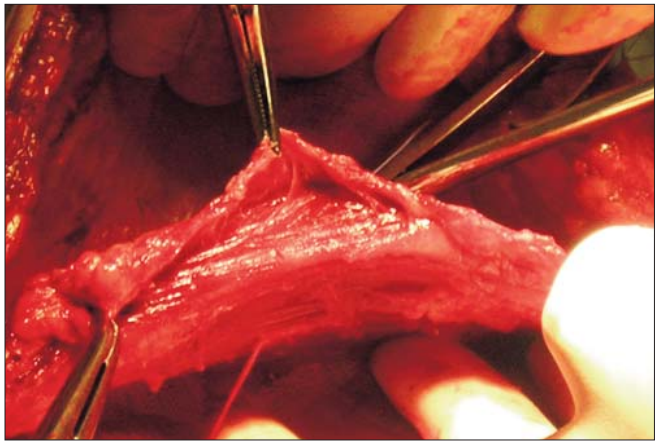

Figure 2. *The rectus abdomini muscle sheath open. Muscle mass is observed with the anterior sheath*

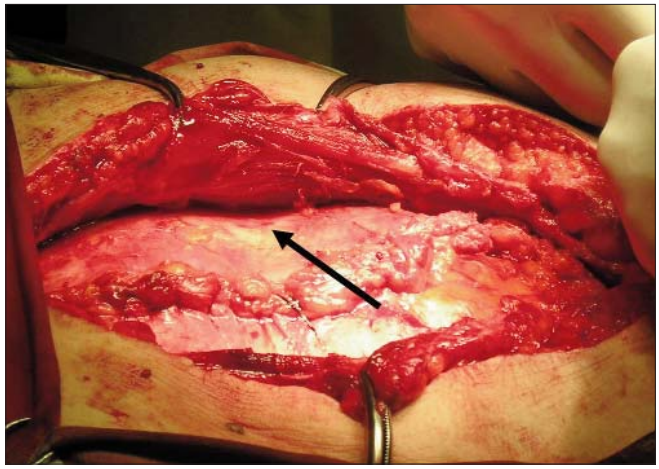

Figure 3. *Closure of the posterior sheath and peritoneum with a continuous thread. Note the large surface area, future site of the mesh placement*

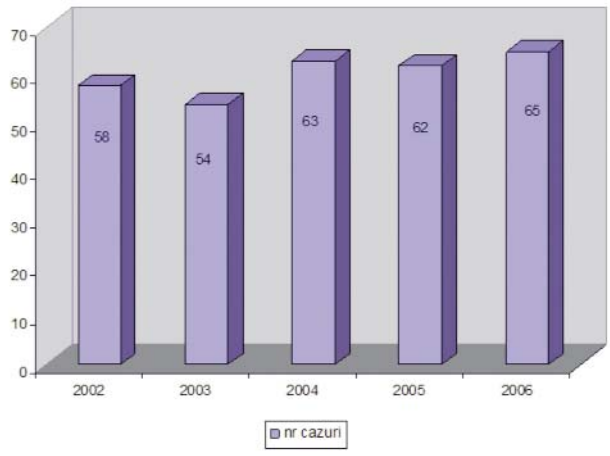

Figure 1. *Annual distribution of cases operated*

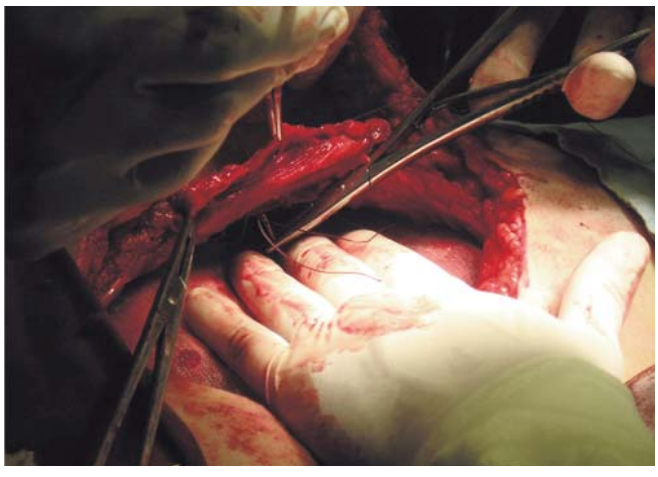

Figure 4. *Transrectus mesh fixation*

Table 1. *Qualitative and quantitative questionnaire assessment of quality of life after incisional hernia cure*

1. How do you feel after your hernia cure?		
1.	Worse than before	- 1
2.	Bad	- 0
3.	The same	- 1
4.	Well	- 2
5.	Very well	- 3
6.	Excellent	- 4
2. Do you have any of the pre-operation symptoms?		
1.	yes	- 0
2.	no	- 1
3.	which one?	
3. Have you developed any symptoms or any complications that you had not had before surgery?		
	yes – 0	
	no – 1	
which of the following - 0		
	- chronic pain	
	- mesh migration	
	- chronic sinuses (infection)	
	- limiting abdominal wall movements	
1.	when did it appear (months from surgery)?	
2.	did you fast?	
	yes – 0	
	no –1	
4. Did your physical activity improve after surgery?		
1.	yes – 1	
2.	no – 0	
5. Are you satisfied with your surgery?		
1.	yes – 1	
2.	no – 0	
3.	why?	
6. Would you recommend the surgery to one of your friends?		
1.	yes – 1	
2.	no – 0	
3.	why ?	

The results of the questionnaire were labelled according to the following scale:

Excellent - 9 to 10 points
Very good - 6 to 8 points
Good - 5 to 6 points
Poor - 3 and 4 points
Very poor - under 3 points

Only the results of direct examination were recorded.

Results

Demographic data are detailed in *Table 2*.

275 patients remained in the study (89 male and 186 female) with the following distribution of hernias: vertical median - 202 (73.45%) (54 supraombilical, 30 umbilical, 84 subombilical and 34 xyfo-umbilical), superior quadrant - 26 (9.45%), the right inferior quadrant - 34 (12.36%), lumbar - 9 (3.27%), Pfannenstiel - 4 (1.41%) (*Fig. 5*). The sizes of the abdominal wall defect were over 15 cm in 83 patients (29.67%), between 10 and 15 cm in 168 patients (61.58%), between 5 and 10 cm in 18 patients (6.59%) and less than 5 cm in 6 patients (2.19%). Recurrence rank is shown in *Fig. 6*.

Table 2. *Demographic characteristics of patients in the study group*

Number of patients	302
Male: female ratio	98:204
Age (years) (medium and limits)	58.75 (21-78)
BMI (kg/m^2) (medium and limits)	33.5 (22 - 41)
ASA score	2 (1 -4)
Exclusion criteria	BMI > 40 – 17 patients ASA ≥ 3 – 7 patients sever COPD – 3 patients

BMI – Body Mass Index; ASA – American Society of Anesthesia Score; COPD – Chronic Obstructive Pulmonary Disease

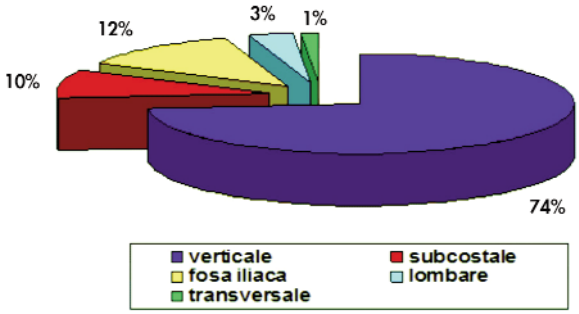

Figure 5. *Distribution of parietal defects depending on location*

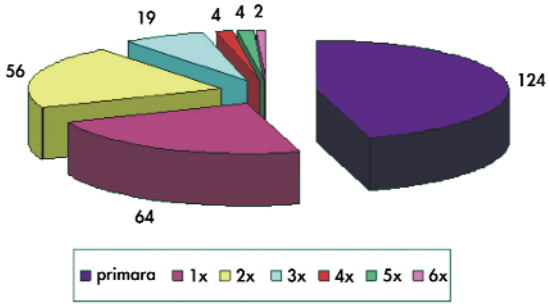

Figure 6. *Distribution of patients in relation to recurrence rank*

In 5 cases we performed limited enterectomies because of small intestine accidental injuries.

No postoperative mortality was recorded. There have been no major systemic complications (cardiac, pulmonary, neurologic or thromboembolic). Local complications represented the majority and are listed in *Table 3*.

In 2007 the questionnaires were sent to 237 patients who had undergone surgery at least 18 months previous to that date. Responses came from 171 patients with postoperative follow-up at 18 to 72 months (average 37.8 ± 2). 143 patients were directly examined by the senior operating surgeon and revealed the following complications: recurrence - 6 (4.19%), local abdominal pain related to movement - 18 cases (12.58%), chronic cutaneous fistula - 8 (5.59%) (*Fig. 7*). It is to be mentioned that 2 of the recurrences and 3 chronic fistulas

Table 3. *Immediate postoperative complications*

Wound hematoma requiring reintervention	18 (6.59%)
Wound seromas	26 (9.52%)
Superficial infections (2 patients with small bowel resection)	14 (5.12%)
Deep infections with mesh involvement (1 patient with small bowel resection)	4 (1.46%)

were associated with intestinal resection and local postoperative infection (*Table 3*).

In 2009, 260 questionnaires were again sent. These were filled in by 148 patients who were examined directly and 118 (less than half) with a postoperative follow-up of 49 months. There were two recurrences still raising the overall rate of relapse at 6.7%. Data on quality of life are presented in *Table 4*.

Discussion

Due to the complexity of the registered wall defects but also because of high risk factors present in patients referred for surgery, treatment of incisional hernias is challenging both for the surgeon and the patient. Most of the patients are obese and have multiple other comorbidities such as diabetes and obstructive chronic pulmonary disease. Additionally, many of them present with a history of multiple laparotomies leading to the formation of strong adhesive syndromes or recurrent hernias with large wall defects. Following principles to consistently avoid the gastrointestinal complementary surgeries due to the high risk of prosthetic contamination, we obtained good long lasting results. Relatively low rate of morbidity and absent mortality in this series, demonstrates that intervention can be performed safely. Recurrence rate of 6.7% at 3 to 7 years postoperatively demonstrates that the procedure itself is highly efficient if it is correctly performed. Furthermore, 64% of patients were satisfied with the subsequent development of quality of life.

Despite the good results that we obtained, the study is limited by reduced follow-up and by the recurrence rate based on a small number of patients directly examined. If we assume that the unexamined patients recurrence rate was similar, we record an overall rate of 12%, which correlated with defect complexity seems reasonable and superimposable with literature data (15).

The technique itself provides strategic placement of the mesh so that it covers without tension the entire wall defect and optimizes its tissue ingrowth. Coverage of prosthetic material is ideal, if possible, because it protects against infection. Opening the intestinal tract is a theoretical contraindication to prosthetic repair, but given the complexity of abdominal wall defects the techniques of tissue repair are doomed to failure at a rate of 50% (16).

Aggressive treatment of suppuration in the early days of the event, both locally and systemically, may be useful in preventing the risk of contamination of the prosthesis which can thus be saved (17).

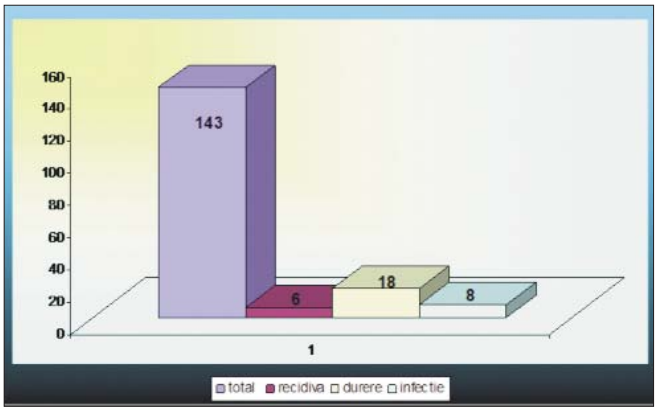

Figure 7. *Late postoperative complications*

Table 4.

	2007	2009
Excellent	2 (1.39%)	3 (2.54%)
Very good	48 (33.56%)	43 (36.44%)
Good	41 (28.61%)	37 (31.35%)
Poor	46 (32.16%)	27 (22.88%)
Very poor	6 (4.19%)	8 (6.77%)
Total	143 (100%)	118 (100%)

Conclusions

The complex incisional hernia surgical cure Rives-Stoppa technique is a safe procedure, sustainable and efficient, providing a high rate of both patient (by the high degree of comfort) and surgeon satisfaction (by the low rate of complications and recurrence). Postoperative wound infection and especially of the prosthesis are the main causes of relapse and dissatisfaction.

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