Short Report

PREVENTION OF WOUND COMPLICATIONS IN PATIENTS WITH POSTOPERATIVE VENTRAL HERNIAS

Vinnik Yu., Petrushko C., Nazaryants Yu. and Gorbunov N.
The Krasnoyarsk State Medical University named after professor V.F.Voino-Yasenetsky Krasnoyarsk, Russia

Summary: The article presents the estimation of wound complication prevention efficacy in allohernioplasty in 152 patients aged 33-76 years old with large postoperative ventral hernias with the use of three techniques of wound drainage – Rendon's traditional vacuum drainage, Blake Drains and drainage system UnoVac.

Keywords: postoperative ventral hernias, complication, low vacuum drainage systems, Blake Drains, UnoVac, Ulmer.

The problem of postoperative ventral hernias repair has not lost its actuality. In the postoperative period after hernioplasty various wound complications are often seen, their rate reaching 20.9-49.2% [1, 2, 4, 5].

Prevention of infectious wound complications in hernioplasty, especially in cases of large and giant postoperative ventral hernias, is one of the main strategic issues of their complex operative repair [3, 6, 7].

The aim of our investigation is to assess wound complication prevention efficacy in allohernioplasty in cases of large and giant postoperative ventral hernias with the use of three techniques – traditional vacuum wound drainage with Rendon's drain, Blake Drains and drainage system UnoVac.

Materials and methods

Since 2005 till 2007 in the Krasnoyarsk City Clinical hospital № 7 152 patients aged 33-76 years old were operated on for large postoperative ventral hernias. There were 105 females (69%) and 47(31%) males. All the patients had postoperative ventral hernias of large size (the defect of aponeurosis was 15 to 20 cm in diameter). Hernioplasty in these patients was performed with the help of Rives' and Stoppa's techniques into the position "sublay". In all the patients prolene net "Ethicon" was used for allohernioplasty. For qualitative indices a share error, median and fractils Me [P25; P75] were presented. In determining difference significance on complication development rates Pierson's Chi-square or accurate Fischer's criterion were used.

Depending on the drainage techniques all the patients were divided into three groups. These groups were matched in age, sex, and hernia size. In the first group (50 patients) wound drainage was carried out in a traditional way with the help of Rendon's vacuum drain.

In the second group (51 patients) drainage was performed with Blake Drains (Fig. 1). This drain was inserted in the same positions as in case of drainage with Rendon's drain.

Figure 1. General view of Blake Drains

In the third group the drainage of the postoperative wound was done with a special low-vacuum drainage system UnoVac. The drainage tubes were placed in the area of implanted prolene net and in the subcutaneous fat. With the help of stylets the drainage tubes were withdrawn outside the postoperative wound and after connecting with a special T-joint they were attached to the vacuum system.

The postoperative wound drainage efficacy in all three groups was carried out with the help of ultrasonic investigation.

Results and discussion

Analyzing the received results we revealed the following complications (table 1) which differed in prevalence in the groups under investigation.

Table 1. Prevalence of complications in patients with postoperative ventral hernias (+ m)

	Specific structure of complications in the groups under investigation					
Complications	I (n=51)		II (n=50)		III (n=50)	
	n	%	n	%	n	%
Seroma	7	14.0 + 4.9	3	6.0 + 3.4	2	4.0 + 2.8

Complications	Specific structure of complications in the groups under investigation					
	I (n=51)		II (n=50)		III (n=50)	
	n	%	n	%	n	%
Infiltrate in the area of postoperative wound	3	9.0 + 4.0	1	2.0 + 2.0	0	0
Wound infection	2	4.0 + 2.7	0	0	0	0
Total	12	27.0 + 6.2*	4	8.0 + 3.8**	2	4.0 + 2.8***

Note: *P1-2=0.005; **P2-3=0.68; ***P1-3=0.15.

In the first group serous exudation from the wound was seen in 21+6.9% of patients for 5-7 days. Formation of seroma was noted in 14+4.9% of patients with long exudation from the wound for 14-16 days. On ultrasonography accumulation of serous fluid (about 60 to 90 ml) was visualized in the subcutaneous fat, which demanded performing multiple (3-5 times) punctures. The drains were removed on the 7-9th day. Infiltrate in the area of the postoperative wound was seen in three (9+4.0%) patients. In two (4+2.7%) patients superficial postoperative wound infection was noted that is why the gauze implant was not removed. Length of hospital stay of the patients of the first group was 13 days [12, 14].

In the second group serous exudation from the wound for 3-4 days was seen in five (10+4.2%) out of 50 patients for 3-4 days, seroma was formed in 6 + 3.4% of cases with exudation from the wound for 5 days. On control ultrasonic examination limited accumulation of serous fluid was not visualized. The drain was removed on the 5-7th day. There was no suppuration in this group of patients. Infiltrate in the area of the postoperative wound was seen in one (2+2.8%) patient. It was eliminated with the help of conservative treatment. Length of hospital stay of the patients of the second group was 10 days on the average [10, 12].

In the third group serous exudation from the wound was also seen for 3-4 days in four (8+3.8%) patients, seroma being formed in two (4+2.8%) of the patients with exudation from the wound for 5-6 days. On control ultrasonic examination limited accumulation of serous fluid was not visualized. The drain was removed on the 5-6th day. There was no suppuration in this group of patients. There was no infiltrate in the area of the postoperative wound. Length of hospital stay of the patients of the third group was 10 days [9, 10].

As it is seen from table 1, there are some significant differences as for complication prevalence both among all three groups (criterion Chi-square p=0.012), and between the first and the second groups (accurate Fischer's criterion p=0.05), between the second and the third groups (p=0.678), between the first and the third groups (p=0.15).

Thus, early postoperative period after alloherniоplasty for large postoperative ventral hernias is accompanied with profuse serous exudation from the wound, which requires adequate vacuum drainage aimed at prevention of pyo-inflammatory wound complications. Traditional drainage techniques do not yield adequate drainage of the postoperative wound, which results in high wound complication rates. The use of drainage system UnoVac and Blake Drains due to constant and even rarefaction helps to significantly decrease length of serous exudation from the wound, to prevent seroma formation and postoperative wound infection and, in that way, to significantly improve short-term and follow-up results of repair, to decrease length of hospital stay of patients.

References

1. Ryabtsev V.G., Belokrinitsky N.G., Smirnova N.G. et al. **Prognosis and prevention of purulent surgical complications** // *Sov.Med.* – 1985. – № 3. – P. 21-24.
2. Tkachenko A.N. **Prognosis and prevention of purulent complications in postoperative ventral hernias repair: Abstract … cand. med. sc.** – M, 1989. – P. 32.
3. Toskin K.D., Zhebrovsky A.V. // **Hernias of the abdominal wall.** – M.: Medicina, 1990. – P. 270.
4. Galtier H. **Traitment chirurgicale de l'obesite de la paroi abdominale avec ptose** // *Mem Acad Chir.* – 1955. – Vol. 88, № 3. – P. 341-344.
5. Kaufman M., Weissberg D. **Marlex mash in giant ventral hernia repair** // *Isr J Med Surg.* – 1980. – Vol. 16, № 2. – P. 739-742.
6. McVay C.B. **The normal and pathologic anatomy of the transversus abdominis muscle in inguinal and femoral hernia** // *Surg Can N Am.* – 1971. – vol. 51, № 6. – P. 1251-1261.
7. White T.J., Santos M.C., Thompson J.S. **Factors affecting wound complications in repair of ventral hernias** // *Am Surg.* – 1998. – Vol. 64, №3. – P. 276-280.