Helpful surgical technique in massive abdominal panniculectomy

Cory Goldberg BSc MD, Joel Fish BSc MSc MD FRCSC

University of Toronto, Division of Plastic Surgery, Sunnybrook Hospital, Toronto, Ontario

C Goldberg, J Fish. Helpful surgical technique in massive abdominal panniculectomy. *Can J Plast Surg* 2001;9(5):205-207.

A morbidly obese 51-year-old woman who was 155 cm tall and weighed 170 kg, and had functional limitation and angina due to her weight and massive pannus, underwent abdominal panniculectomy. The abdominal pannus was pierced with two, 4 mm, nonthreaded Steinmann pins (Synthes, USA) from which the pannus was elevated and suspended with rope. This elevation allowed for traction and simultaneous exposure of both the superior and inferior aspects of the pannus, assisting in surgical resection. The pannus removed weighed 25 kg. Postoperatively, the patient developed cellulitis on the inferior flap that resolved with antibiotics, and the wound healed in two weeks.

Key Words: *Obesity; Panniculectomy*

Panniculectomie abdominale massive : Technique chirurgicale utile

RÉSUMÉ : Une femme de 51 ans souffrant d'obésité morbide (taille : 155 cm; poids : 170 kg) ainsi que d'angine et d'une limitation fonctionnelle en raison de son poids et du pannicule adipeux massif a subi une panniculectomie abdominale. Le pannicule abdominal a été perforé au moyen de deux broches de Steinmann de 4 mm nonfiletées (Synthes, EU), puis soulevé et retenu à l'aide d'une corde. La technique a permis de tirer le pannicule et d'exposer simultanément ses faces inférieure et supérieure, ce qui a facilité la résection chirurgicale. La substance retirée pesait 25 kg. Une cellulite, traitée aux antibiotiques, est apparue en phase postopératoire sur le lambeau inférieur; la plaie s'est cicatrisée en deux semaines.

The National Institutes of Health, Bethesda, Maryland, defines being overweight as having a body mass index (BMI) between 25.0 and 29.9 kg/m², and being obese as having a BMI of 30 kg/m² or greater (1). According to these definitions, approximately 22% of adults in the United States are obese (2). Among Canadians, 35% of men and 26% of women had a BMI greater than 27.0 kg/m² in 1994 (3). Among Native Canadian women, the prevalence of a BMI greater than 27.0 kg/m² is 60% (4).

Obese people have a significantly higher rate of consulting doctors, taking medications and needing sick days than does the rest of the population (3). Obesity is a significant risk factor for coronary artery disease, and BMI directly cor-

relates with decreasing exercise tolerance, and an increasing incidence of diabetes and dyslipidemia (5,6). In the authors' institution, the computed tomography scanner is restricted to patients weighing up to 200 kg, because of a gantry diameter of 52 cm, and the angiography suite is limited to patients weighing up to 180 kg.

Obese patients often experience morbidity due to the large pannus that they must carry. They may be functionally impaired with immobility, the inability to turn in bed, back pain and restricted ventilation, while the pannus and the cleft below it may be the source of rashes, chronic ulcers, fistulas and chronic infections that are partly due to lymphedema (7,8).

Obesity is associated with a significantly increased pe-

Figure 1) Photograph of a 155 cm tall, 170 kg, morbidly obese woman before panniculectomy

Figure 3) Photograph of the excised pannus that weighed 25 kg

rioperative risk. The incidence of complications is quoted as 20% to 80% and is directly proportionate to the degree of obesity (9-11).

Abdominal surgery on morbidly obese patients is fraught with many technical problems. This report presents a helpful technique for performing abdominal panniculectomy on patients with morbid obesity.

CASE PRESENTATION

A 51-year-old woman who was 155 cm tall and weighed 170 kg, with a BMI of 70.1 kg/m², presented to the authors'

institution. She had type 2 diabetes, general anxiety disorder and class III angina. Walking short distances resulted in anginal attacks.

Preoperatively, although the patient was able to ambulate with a walker, this was extremely difficult for her. Her abdominal pannus was extremely large, extending past her knees and resting 20 to 25 cm above the floor (Figure 1). This caused a severe impediment to her ambulation, requiring the patient to kick her pannus forward with each step.

The consulting cardiology service was unable to do a complete workup because the patient could not undergo angiography or persantine thallium scan due to technical limitations because of her weight and the size of her pannus. She had an electrocardiogram that was normal and an echocardiogram that showed a grade I ventricle (greater than 60% ejection fraction). She also had an abdominal computed tomography scan that ruled out the presence of a ventral hernia.

The first scheduled operation was cancelled because the patient experienced unstable angina caused by a central line insertion. Two weeks later, she was again brought to the operating room. The abdominal pannus was pierced through-

Figure 2) To assist with panniculectomy, the abdominal pannus was suspended using two, 4 mm, nonthreaded Steinmann pins (Synthes, USA) and a pulley system mounted to the ceiling

and-through with two, 4 mm, nonthreaded Steinmann pins (Synthes, USA) at the two and 10 o'clock positions. The pins were placed carefully through a thick portion of the pannus to prevent them from tearing through the tissue when they were placed under tension. A heavy-duty nylon cord was then secured to each pin and the pannus was elevated by a pulley system mounted to the ceiling (Figure 2). The surgical table was then moved to suspend the pannus in the position that gave optimal exposure, which facilitated insertion of a Foley Catheter (CR Bard, USA) and preparation of the abdomen for surgery without any assistance.

Two surgical teams performed the panniculectomy. The pannus had severe lymphedema and contained vessels up to 12 mm in diameter. With the pannus elevated, there was excellent traction on the tissue, simultaneous exposure of both the superior and inferior aspects of the pannus and much of the blood in the pannus had been drained. When the pannus was removed, it was lowered off the surgical site; its weight was 25 kg (Figure 3).

Postoperatively, the patient recovered quickly with minimal pain. She began ambulating one day after surgery and at first, she had trouble keeping her balance due to her shifted centre of gravity. She reported that walking and turning in bed were considerably easier after the surgery. Three days after surgery she developed cellulitis on the inferior flap of her incision, which responded to antibiotics. She was discharged six days after surgery without further complication. Her wound completely healed within two weeks.

DISCUSSION

Massive abdominal panniculectomy is a procedure that can considerably improve the quality of life of patients. It can improve exercise tolerance by removing the impediment of the pannus by reducing weight and possibly improving pulmonary function. It also eliminates infection, odour and wound care problems associated with the pannus. However, given a complication rate as high as 80%, it is a pro-

cedure that should not be undertaken lightly by either the patient or surgeon.

Previously, Daw and Mustoe (12) described the use of silicone tubing as a tourniquet to limit blood loss during pannus resection. The use of orthopedic pins to suspend the pannus in a panniculectomy has also been described by Matory Jr et al (13) and Meyerowitz et al (8). The present case report is an example of this technique used successfully, to the patient's benefit.

REFERENCES

1. National Institute of Health, National Heart, Lung and Blood Institute. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report. Washington: United States Department of Health and Human Services, 1998.
2. Flegal KM, Carrol MD, Kuczmarski RJ, et al. Overweight and obesity trends in the United States: Prevalence and trends, 1960-1994. *Int J Obes Relat Metab Disord* 1998;22:39-47.
3. Trakas K, Lawrence K, Shear NH. Utilization of healthcare resources by obese Canadians. *CMAJ* 1999;160:1457-62.
4. Katzmarzyk PT, Malina RM. Obesity and relative subcutaneous fat distribution among Canadians of First Nation and European ancestry. *Int J Obes Relat Metab Disord* 1998;22:1127-31.
5. Jette M, Sidney K, Quenneville J. Association between an excessive body mass index and coronary heart disease risk factors in military personnel. *Mil Med* 1993;158:489-93.
6. Rabkin SW, Chen Y, Leiter L, Liu L, Reeder BA. Risk factor correlates of body mass index. *CMAJ* 1997;157(Suppl 1):S26-31.
7. Petty P, Manson PN, Black R, et al. Panniculus morbidus. *Ann Plast Surg* 1992;28:442.
8. Meyerowitz BR, Gruber RP, Laub DR, et al. Massive abdominal panniculectomy. *J Am Med Assoc* 1973;225:408.
9. Kroll SS, Netscher D. Complication of TRAM flap breast reconstruction in obese patients. *Plast Reconstr Surg* 1989;84:886.
10. Health implications of obesity: NIH consensus development conference statement. *Ann Intern Med* 1985;103(Pt 2):1073-77.
11. Vastine UL, Morgan RF, Williams GS, et al. Wound complications of abdominoplasty in obese patients. *Ann Plast Surg* 1999;42:34-9.
12. Daw JL, Mustoe TA. Use of a tourniquet in panniculus resection. *Plast Reconstr Surg* 1997;99:2082-4.
13. Matory Jr WE, O'Sullivan J, Fudem G, Dunn R. Abdominal surgery in patients with severe morbid obesity. *Plast Reconstr Surg* 1994;94:976-87.