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Short Communication

Novel use and utilization of robotic Hoyer–Hook system for suspension of panniculus morbidus

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ABSTRACT

Panniculus morbidus is a complication of morbid obesity characterized by massive abdominal folds that hang below the beltline. Ulceration, dermatitis, and sinus tract formation of the pannus can cause significant morbidity to the patient and impair activities of daily living. If patients fail medical management, the next step is surgical excision. Challenging aspects of the procedure include adequate suspension of the pannus, cost, and prevention of intra-abdominal injuries. We present a case of a 70-year-old female with panniculus morbidus with endometrial carcinoma. We successfully performed a panniculectomy using a novel combination of towel hooks and the Hoyer lift to suspend the abdomen. In the same anesthesia event, she underwent robotic-assisted hysterectomy. No intra-operative or post-operative complications were encountered, and the patient was satisfied with her results. In this case, we demonstrated an effective and cost-efficient approach to panniculectomy in the severely obese patient.

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Introduction

The prevalence of obesity and its related complications are on the rise worldwide.[1,2] Panniculus morbidus (PM) is a complication of severe obesity characterized by massive abdominal folds that hang below the beltline. Obesity can lead to an accumulation of inflammatory cells around lymphatic vessels, which can impair lymphatic drainage and cause pannus formation through hypertrophy of the skin and subcutaneous tissues.[2,3] Sequelae include chronic inflammation, ulceration, dermatitis, sinus tract formation, and back pain, which can greatly limit patient mobility and reduce their quality of life.[2,4,5] Panniculectomy is a definitive surgical option for patients with this condition, but defining the optimal set-up and procedure is challenging.[6,7]

Several techniques have been described to improve the cost, safety, and efficiency of panniculectomy for PM.[5] A major procedural difficulty involves adequately suspending the pannus, which can be done with Steinmann Pins, K-wires, or large floor crane hooks.[8] In this study, we report a low-cost, safe, and easy panniculectomy technique for panniculus morbidus. Our patient was a 70-year-old female with a BMI of 45.3 kg/m ^{2} and a 12.8-kg pannus requiring hysterectomy for endometrial cancer. The setup involved the implementation of a Hoyer lift and towel clips for an asymmetric pannus. Successful completion of the panniculectomy facilitated robotic hysterectomy for this patient and improved her quality of life.

Case presentation

A 70-year-old female with a past medical history of ventral hernia repair, obesity (BMI 45.3 kg/m ^{2}), and diabetes mellitus who presented to gynecology with several months of abnormal vaginal bleeding. Endometrial biopsy confirmed Grade 1 endometrial carcinoma. She was noted to have a large, asymmetric, chronically inflamed pannus that interfered with her activities of daily living and created difficulty with hygiene. Computed Tomography did not demonstrate any significant hernias within the pannus. She was referred to plastic surgery for panniculectomy both to improve her quality of life and facilitate planned robotic hysterectomy by gynecology.

Treatment

The Golvo 8008 LowBase lift (Hillroom Inc, Batesville, IN) was utilized to lift the pannus (Figure 1A). Seven towel clamps were spaced approximately 2 cm apart across the length of the pannus and attached to the lift using Coban wrap (3M, Maplewood, MN). The pannus was lifted, and the towel clamps were adjusted to distribute the load evenly (Figure 1B). This facilitated correct placement of final surgical markings. An incision was carried out down to Scarpa's fascia. A small hernia to the right of the umbilical stalk containing preperitoneal fat was reduced and closed. Once the entire pannus was excised, it was safely removed off the operative field utilizing the Golvo 8008 Hoyer Lift (Figure 1C). The total weight of the pannus was 12.8 kg. The incision was closed and two bilateral surgical drains were placed. Gynecology was then able to perform a robotic-assisted hysterectomy with pelvic sentinel lymph node dissection.

After the operation, the patient was safely discharged home. Her recovery was complicated by superficial cellulitis that resolved after inpatient admission and intravenous antibiotics. No further surgical intervention was needed. Four months postoperatively the patient's incision was healing well, and she was satisfied with her outcome.

Discussion

Panniculus morbidus is a debilitating condition warranting surgical treatment. Supporting the pannus during resection can be challenging due to its weight and asymmetry. However, adequate elevation is essential for accurate marking, prevention of intra-abdominal injury, and good aesthetic outcome. Our patient required panniculectomy to facilitate hysterectomy for endometrial cancer. Due to her advanced age and multiple comorbidities, we sought to conduct both procedures in a single

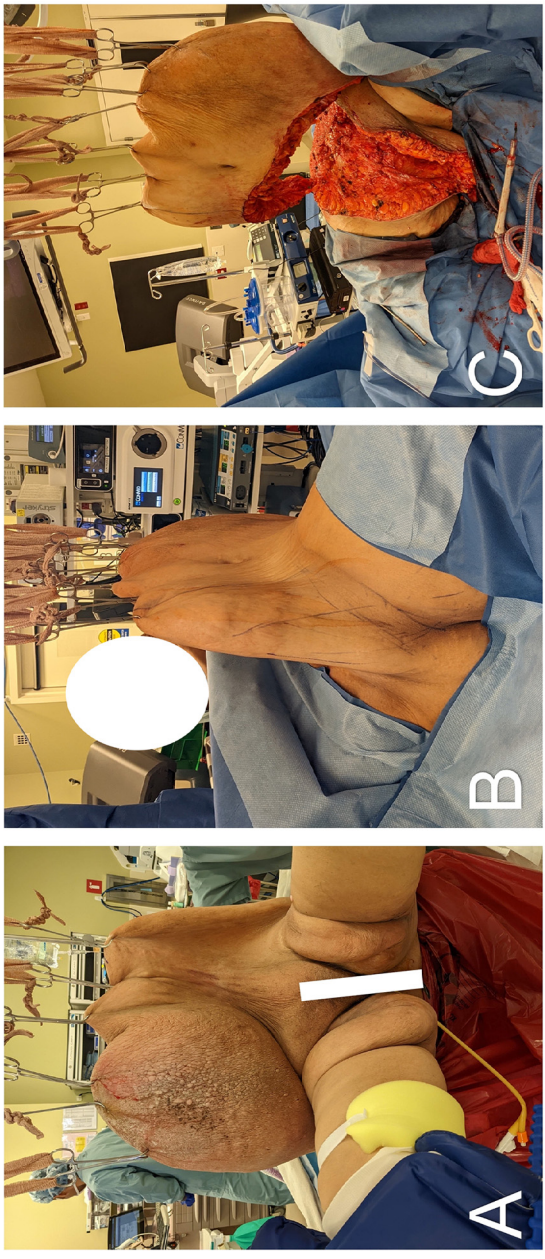

Figure 1. (A) Golvo 8008 Hoyer Lift placed at the foot of the bed to facilitate ease of pannus suspension with towel clamps placed to effectively lift the asymmetric pannus (B) Pannus adequately lifted and ready for sterilization (C) Complete removal of the pannus.

anesthesia event. Thus, we needed to provide adequate elevation that was cost-effective, safe for the patient, and facilitated additional required operations.

To lift the pannus, our team made use of seven towel clamps suspended from a Hoyer lift installed directly over the patient. This setup allowed us to place the patient in stirrups per gynecology and lift the pannus vertically. In this position, the surgeon could easily adjust the towel clamps to expose the origin of excessive adiposity on the inferior abdominal wall. This facilitated easy marking, reduction of a small hernia, removal of the pannus, and easy closure without tension. Further, our setup did not require additional expense for special equipment, as towel clamps are readily available in most operating rooms.

Previous studies have validated panniculectomy to facilitate necessary surgical interventions that would otherwise be obstructed by panniculus morbidus. Panniculectomy combined with pelvic surgery has been shown to decrease the incidence of intraoperative and postoperative complications.[9] Further, retrospective reviews have demonstrated that panniculectomy can safely be performed in anticipation of renal transplantation and can facilitate concurrent transplant.[10]

Other effective techniques for panniculectomy with a mechanical lift have been described, including K-wires, the orthopedic trapeze, and Steinmann pins.[11] Our setup utilized towel hooks, which are safe for the patient as they do not deeply penetrate the abdominal wall. The use of multiple hooks to distribute the weight of the pannus also reduced pressure and prevented tearing of the skin that can occur when using Steinman pins.

Conclusion

Attempting to accurately mark a pannus in the sitting or upright position can be challenging, especially if it is massive or asymmetric. Our technique allowed for accurate marking, reduction of a hernia not previously seen on imaging, and confident excision of a massive pannus, facilitating concurrent hysterectomy for our patient. The system we described utilizes the novel combination of a Hoyer lift and adjustable towel clamps for the safe, effective, and simple suspension of a large, asymmetric pannus.

Ethics

Not required.

Informed consent

IRB approval obtained prior to initiation of report.

Declaration of Competing Interest

The authors declare there is no conflict of interest.

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