To Drain or Not to Drain; Still a Valid Question?

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Objective: To determine whether routine drainage after thyroidectomy is justified.
Design: Prospective, randomized data base.
Setting: Otolaryngology Unit of the Centre Hospitalier Intercommunal, Poissy, France.
Participants: Between November 1996 and May 1997, 100 consecutive patients undergoing either partial or total thyroidectomies were randomized to either an undrained or closed suction drain group. All patients, except those with metastatic cervical lymphadenopathy requiring neck dissection, were eligible for the study. These patients were routinely drained and, thus, excluded from consideration. Intraoperative blood loss, postoperative complications including hematoma and infection, and length of hospital stay were examined.
Results: No significant difference was found between the drained and undrained groups with regard to postoperative hematoma, wound infection, or length of hospital stay.
Conclusions: Based on these findings, routine drainage of thyroid surgery is unnecessary.


Objective: To compare drainage modalities for infected pancreatic necrosis.
Design: Retrospective review of cases from May 1982 to December 1995.
Setting: University of Ulm Hospital, Ulm, Germany.
Participants: The data pertinent to the 3 different treatment techniques for infected pancreatic necrosis were reviewed. For closed management, 52 patients records were used.

REVIEWER COMMENTS

Another area in general surgery in which drain management is somewhat controversial is postnecrosectomy for infected pancreatic necrosis. Drainage after thyroid surgery is one controversial area in general surgery. Some surgeons routinely drain every thyroidectomy, others never use drains, and still others selectively drain post-thyroid surgery.

Multiple reports support Debry and associates’ conclusion. Wihlborg and associates randomized 150 consecutive patients undergoing thyroidectomy to either no drain or closed suction drain. They reported 1 postoperative hematoma in each group. Ruark and Abdel-Misih reviewed 110 thyroidectomies, both partial and total. Drains were not used on any patient. No wound infections, hematomas, or bleeding requiring reoperation were reported. These results support the concept that not all thyroidectomies need to be drained.

REVIEWER COMMENTS
reviewed. Treatment included surgical debridement of all necrotic material, intraoperative lavage with 6-l to12-l saline, and placement of 2 large bore, double lumen catheters in the retroperitoneum for continuous postoperative lavage. Initial lavage was at a rate of 24 l per day, and continued until the effluent was clear of necrotic material, with low amylase and lipase levels.

Results: Lavage was continued for an average of 30 days postoperatively. Forty percent of patients required a second operation. Complications included abscess in 21% of patients, bleeding in 21%, and bowel fistulas in 23%. Eight deaths occurred among the 52 patients (15%). The authors reviewed 3 series of closed drainage, and found an overall mortality rate of 19.8%.6-8 This was nearly comparable to the series of open techniques they reviewed.9-12

Conclusions: Necrosectomy and continuous closed lavage protocol is equal to open procedures with respect to the clinical outcome, and superior in terms of the lower demand for technical equipment, TCU therapy, and cost.

Objective: To determine if small-bore catheters (7 Fr.) are as effective as large-bore catheters (14 Fr.) for drainage of intraabdominal abscesses.

Design: Retrospective review from January 1990 to December 1995.

Setting: Zurich University Hospital, Zurich, Switzerland.

Participants: Sixty-four consecutive patients who underwent percutaneous drainage of abdominal abscesses were reviewed. Two types of drains were used, a 7 Fr. pigtail catheter and a 14 Fr. sump drain. All catheters were placed under sterile conditions using ultrasound guidance. Drainage was considered successful if the white blood cell count returned to normal and clinical symptoms resolved. Drainage was considered a failure if clinical symptoms persisted or a leukocytosis persisted after 4 days.

Results: Forty patients had a small-bore catheter placed, whereas a large-bore catheter was placed in 24 patients. Success rates were 85% and 83%, respectively. The highest failure rates were seen in patients with pancreatic abscesses. Excluding these patients, success rates were 94% and 87% for small and large-bore catheters, respectively. No significant differences were seen in complication or recurrence rates.

Conclusions: Small-bore catheters are just as effective as large-bore catheters when draining intraabdominal abscesses. Caution should be taken when draining pancreatic abscesses, because percutaneous drainage tends to fail.

REVIEWER SUMMARY

In the field of surgery, controversy has always surrounded the use of drains. Some surgeons use drains for most intraperitoneal operations, whereas others feel drainage is completely unnecessary. What drains, if any, should be used, when should they be used, and what are some of the potential hazards of drains?

The ideal drain should effectively evacuate the effluent, avoid damaging adjacent tissues, restrict the introduction of infection, and be easily removed when no longer needed. Clearly, if drain usage is selected, the type must be tailored to each situation.

Two main categories of drains exist: passive and active. The Penrose drain is the classic example of a passive drain. These are soft rubber catheters that function by creating a low resistance tract from which material can exit the drained cavity. Active drains function through a closed pressure gradient. A Jackson–Pratt drain has a collapsible bulb at the external end of the catheter to create a negatively pressurized system. The fact that the system is closed helps reduce the possibility of retrograde infection, and it aids in creating tissue apposition. Whether passive or active, a drain’s primary function remains evacuation of unwanted material from a space.

Though a valuable tool to the surgeon, drains are not without risks and complications. They can act as a nidus for infection from local tissue irritation and bacterial adherence with retrograde migration. Drains may become obstructed, causing inadequate removal, and, thereby, retention of undesirable material. Physiologic abnormalities occur with massive loss of fluid and electrolytes. Mechanical problems can be seen. Drains may become entrapped, and bowel herniation can occur.

Situations or locations in which drains have been advocated probably include the entire spectrum of surgical disease. Drains have been discussed extensively when used in conjunction with thyroid surgery (drainage of blood), pancreatic debridement (drainage of pus and necrotic material with obliteration of dead space), and the primary treatment of abscesses. As much attention should be paid to the nature of the material to be drained as to the type of drain, because this aspect has just as much bearing on the situation and, certainly, as much impact on the success of the intervention. Blood clots,
and thus, is poorly drained. Pus drains relatively well, but particulate matter may hinder effective drainage. This should, therefore, temper the selection of drain type.

In summary, many surgeons have both advocated and opposed the use of drains in various situations. Drains are used to eliminate many undesired substances, such as pus, blood, bile, and lymph. Often, no consensus exists as to whether a drain should be used. One needs to understand the different types of drains and types of substances to be drained, as well as the basis behind therapeutic and prophylactic drainage. These concepts can then be applied to individual circumstances. Although definite answers may not always exist, with a generalized understanding of drains, one can then apply these principles to most situations.

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REFERENCES


