

Free microvascular fillet flap reconstruction following external hemipelvectomy

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Background

- External hemipelvectomy is a salvage procedure typically reserved for invasive, malignant tumors of the pelvis and retroperitoneum.^{1,2}
- When local coverage is not feasible, a microvascular free fillet flap from the amputated limb may reduce donor morbidity while providing stable wound coverage.^{3,4}

Objectives

- 1) Determine the survival of reconstructive free fillet microvascular flaps following external hemipelvectomy
- 2) Report the rate of surgical site infection (SSI), wound complications, and unplanned return to the operating room
- 3) Determine overall length of stay (LOS) and rates of hospital readmission
- 4) Report oncological outcomes for this patient population

Methods

- Retrospective review of 11 consecutive patients (6 F, 5 M) who underwent external hemipelvectomy with free fillet microvascular flap reconstruction from 1994-2020 for sarcoma resection
- Three patients underwent hemipelvectomy with hemi-sacrectomy; 4 underwent compound hemipelvectomy with resection of contiguous organs
- Nine free flaps originated from lower leg and 2 originated from total thigh
- Iliac arteries were anastomosis point in 8 patients
- Mean ASA score: 2.5
- Mean Charlson Comorbidity Index: 3.1

Results

- Ten of 11 primary free microvascular flaps remained viable post-operatively
 - Despite patent vascular anastomoses angiographically, one patient developed venous engorgement secondary to massive abdominal distention, disseminated intravascular coagulation, and hemodynamic instability
- Including the lost free fillet flap, 2 flaps required unplanned return to the operating room
 - One patient experienced significant lower leg flap congestion requiring re-exploration; no arterial or venous thrombi were found
- Three patients developed superficial flap infections requiring antibiotics
 - Two resolved during the postoperative hospital course; one required hospital readmission from inpatient rehabilitation for parenteral antibiotics

Table 1: Postoperative Results

Result	N (%)
Free flap loss	1 (9.1)
Unplanned OR return	2 (18.2)
Infection	3 (27.3)
Readmission	1 (9.1)
Hemipelvectomy hernia	0 (0.0)
Mean LOS, d (range)	21 (10-38)
Mean follow-up, mo (range)	8 (1-30)
Local recurrence	1 (9.1)
Died of disease	5 (45.5)

Figure 1

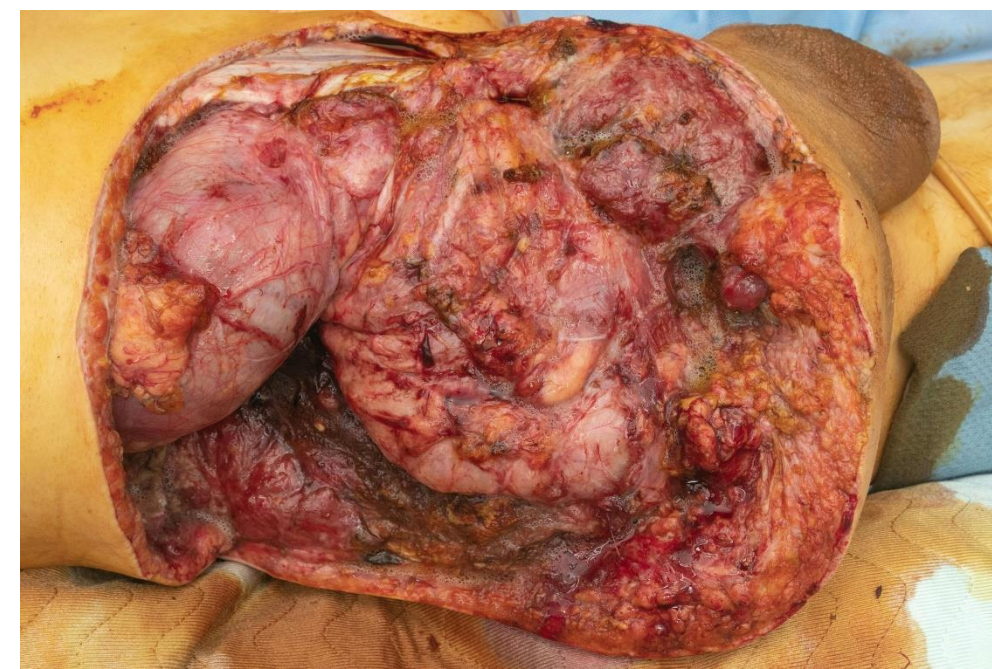


Figure 1: External hemipelvectomy defect prior to free fillet flap coverage.

Figure 2



Figure 2: Amputated lower limb following fillet flap harvest.

Figure 3



Figure 3: Free fillet flap coverage of the wound defect with labels indicating flap orientation.

Figure 4

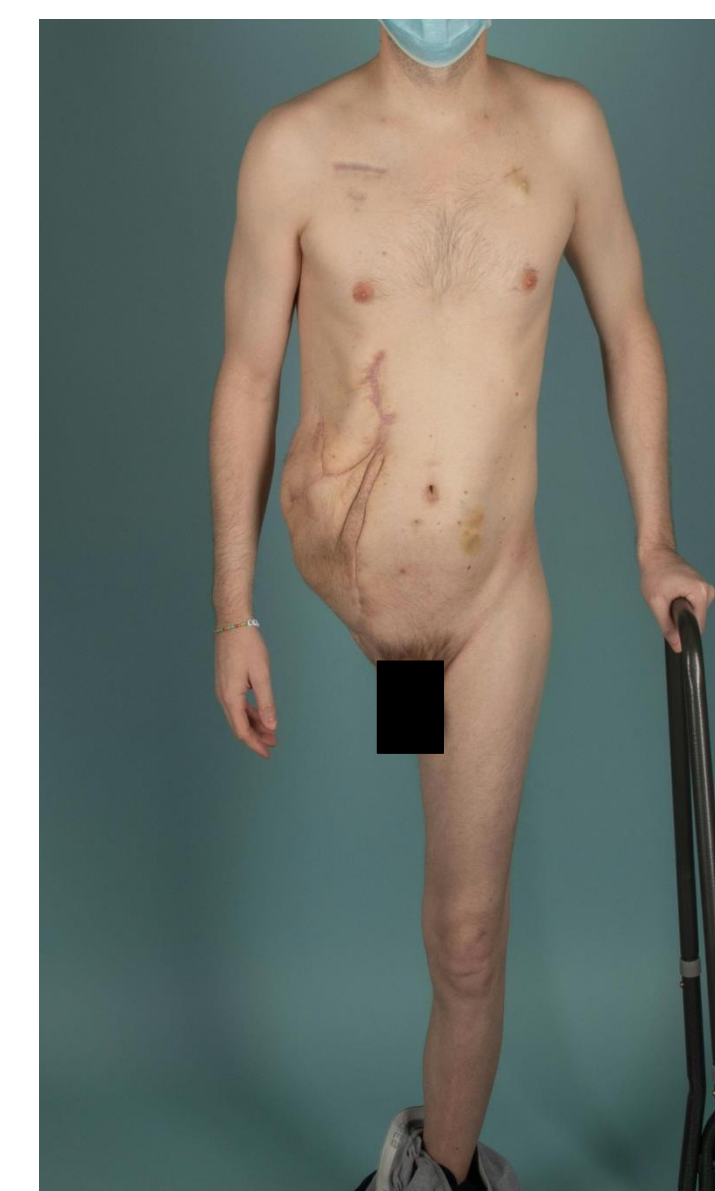


Figure 4: 6 months status post external hemipelvectomy with free fillet flap reconstruction.

Discussion

- Acute perioperative case fatality was 0%; however, disease-specific survival was poor (45%, mean 10.4 months).
- Wound healing and flap necrosis are predominant postoperative concerns.
- Vascular ligation at the level of the common iliac vessels may increase risk of flap necrosis.⁵

Conclusions

- Hemipelvectomy is an extensive salvage operation that may be fraught with complications.
- Local coverage may not be feasible due to flap necrosis and infection secondary to extensive skin involvement or poor flap vascularity.
- Microvascular free-flap reconstruction following complex external hemipelvectomy is an oncologically safe and reliable method of wound closure.

References

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