

# Donor Site Morbidity of the Rectus Abdominis Free Flap in Head and Neck Reconstruction

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## ABSTRACT

### Educational Objective:

At the conclusion of this presentation, the participants should be able to discuss complication rates of rectus abdominis free flaps in head and neck reconstruction and compare relative rates of hernia formation with and without reinforcement of the donor site.

### Objectives:

Donor site morbidity of the rectus abdominis free flap has not been well described in head and neck reconstruction. We discuss our experience, evaluate donor site morbidity, and evaluate the role of abdominal wall reinforcement in reducing postoperative complications.

### Study Design:

Retrospective review of 179 patients who underwent rectus free tissue transfer between January 1999 and July 2015 separated into those receiving reinforcement and those that did not.

### Methods:

Complication rates of 89 patients receiving reinforcement of their abdominal defect were compared to the 90 that did not.

### Results:

Male to female ratios (3:1) and mean age (60 years) were similar in both groups. Reinforcement consisted of acellular dermis (n=34) or mesh (n=65). In the reinforcement group, 6 patients (6.7%) had acute complications, (within 14 days of surgery), and 8 patients (9%) had a long term complication (greater than 14 days). In those without reinforcement, 7 patients (7.8%) had acute complications and 11 patients (12.2%) had long term complications. There were no statistical differences in the overall donor site complication rate between the groups. Rates of hernia (3.4 vs 8.8%) (P=0.37) and abdominal wall dehiscence (1.1 vs 0%) (P=0.50) were similar for reinforcement vs. none.

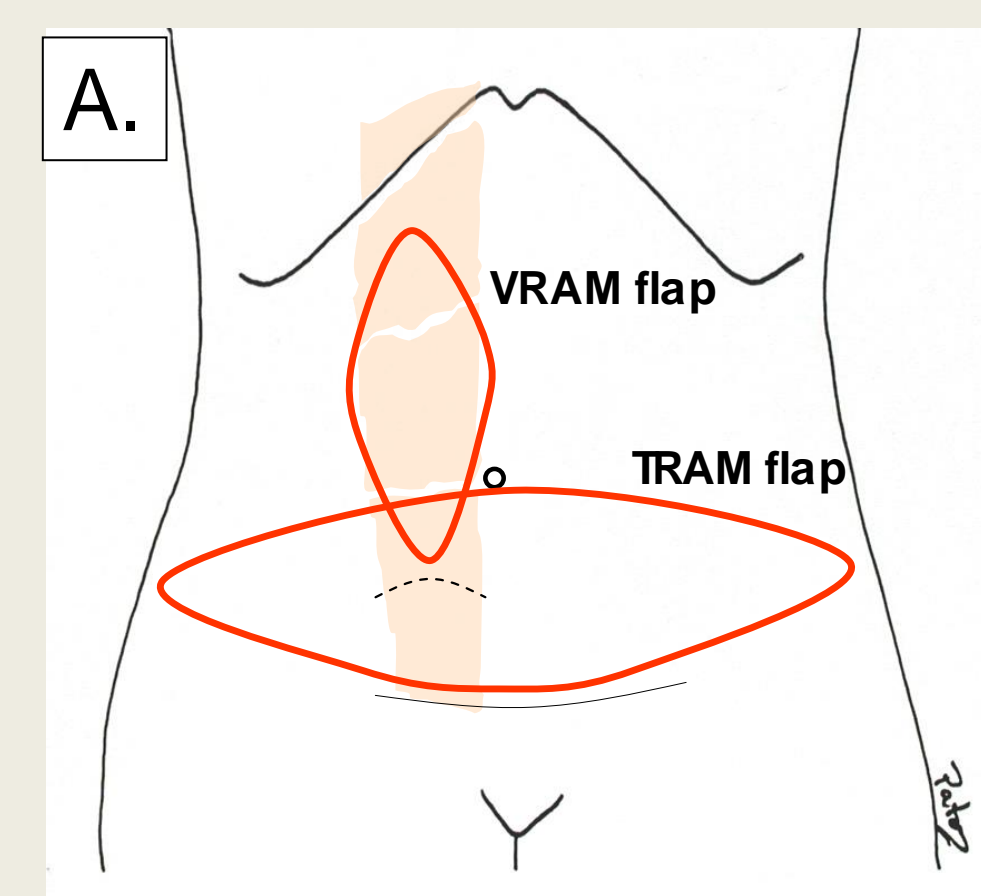
### Conclusions:

Donor site complications of the rectus abdominis free flap are uncommon. The use of re-enforcement for tension free closure of the rectus abdominis donor site does not significantly reduce the rate of hernia formation.

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## INTRODUCTION

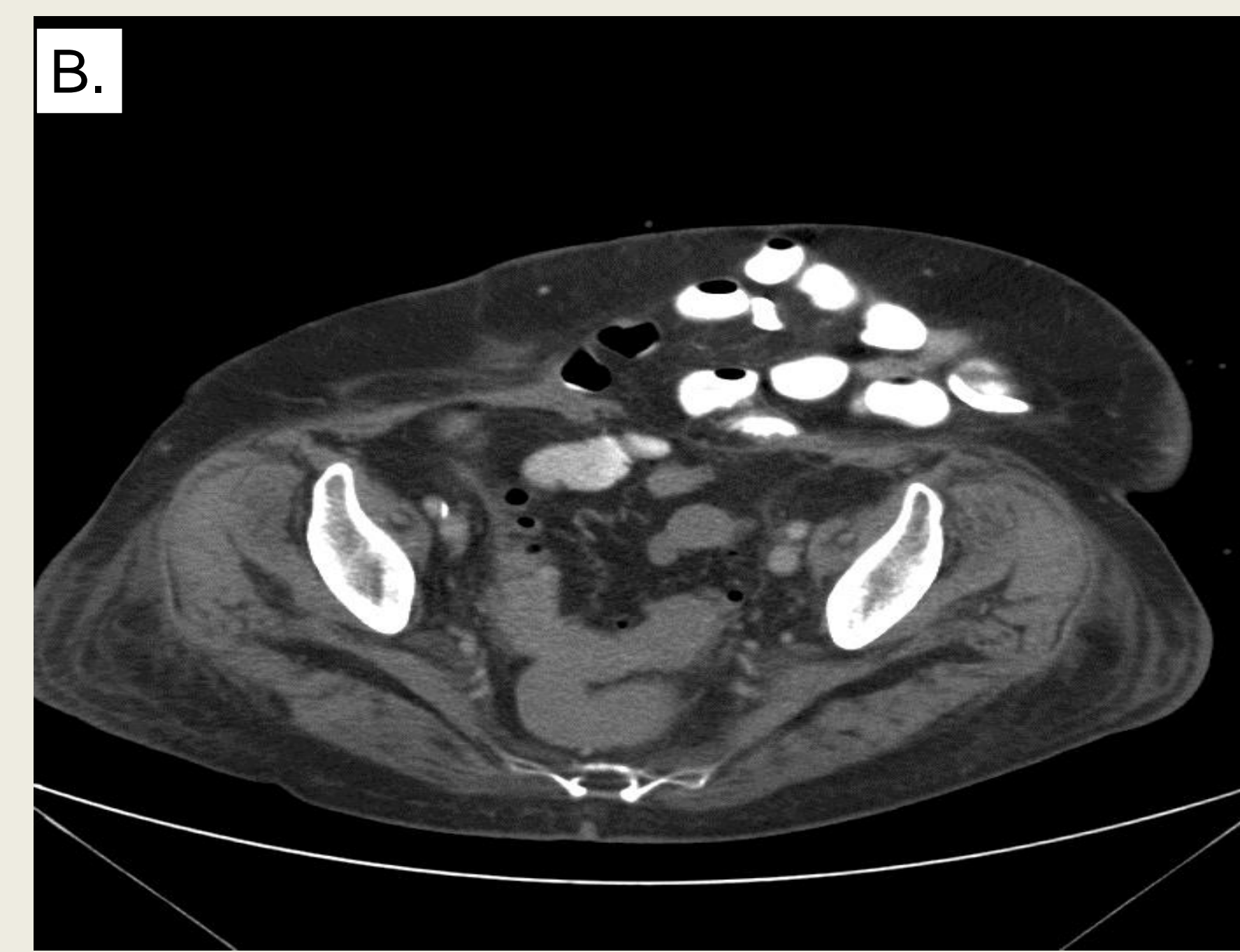
- Rectus abdominis free flaps carry potential risk for postoperative donor-site complications such as weakening of abdominal wall and hernia formation.
- Literature regarding complication rates pertains predominately to breast reconstruction which employs transverse rectus abdominis myocutaneous (TRAM) free flaps
  - 15% donor site complication rate (seroma, infection, hernia, fat necrosis, umbilical necrosis)
  - Up to 50% of abdominal wall anomalies
  - Up to 43% rate of hernia
- Donor site morbidity in rectus free tissue transfer in the head and neck reconstruction is poorly described.
- Flap harvest and head and neck population differs from that of breast reconstruction
  - Vertical rectus abdominis myocutaneous (VRAM) most common employed
  - 2/3 male
  - Higher incidence of tobacco use and pulmonary obstructive disease
  - High proportion of concurrent tracheostomy
  - Abdominal wall reconstructed with or without reinforcement
- Study Aim:
  - Analyze experience using the rectus abdominis myocutaneous flap in head and neck reconstruction
  - Describe donor site morbidity and the possible benefits of using synthetic mesh or acellular dermis to reduce postoperative complications



A. Demonstration of the orientation and approximate location of the skin paddle in the vertical rectus abdominis myocutaneous (VRAM) free flap and the transverse rectus abdominis myocutaneous (TRAM) free flap.

## METHODS

- Retrospective review of 179 patients who underwent rectus free tissue transfer between January 1999 and July 2015 separated into those receiving reinforcement and those that did not.
- Reinforcement used, at surgeons discretion, to reconstruct the abdominal wall fascial defect in order to provide tension free closure
  - Acellular dermal matrix (AlloDerm, LifeCell Corporation, Branchburg, New Jersey)
  - Surgical mesh (Cook Medical Inc., Bloomington, Indiana)
- Complication rates of 89 patients receiving reinforcement of their abdominal defect were compared to the 90 that did not.



B. Abdominal CT – axial cut depicting severe hernia developing several weeks after harvest of rectus abdominis free flap and closure with reinforcement.

## RESULTS

### Complications

#### No Reinforcement Group N=90

##### 7 Acute Complications (<14 days)

- (1) flap failure
- (1) pneumothorax
- (2) hematoma
- (1) seroma
- (2) cellulitis

##### 11 Long Term Complications (>14 days)

- (2) hematoma
- (1) seroma

#### Hernia Formation

- (8) 8.8%

#### Abdominal Dehiscence

- (0) 0%

#### Reinforcement Group N=89

##### 6 Acute Complications (<14 days)

- (2) cellulitis
- (2) hematoma
- (2) seroma

##### 8 Long Term Complications (>14 days)

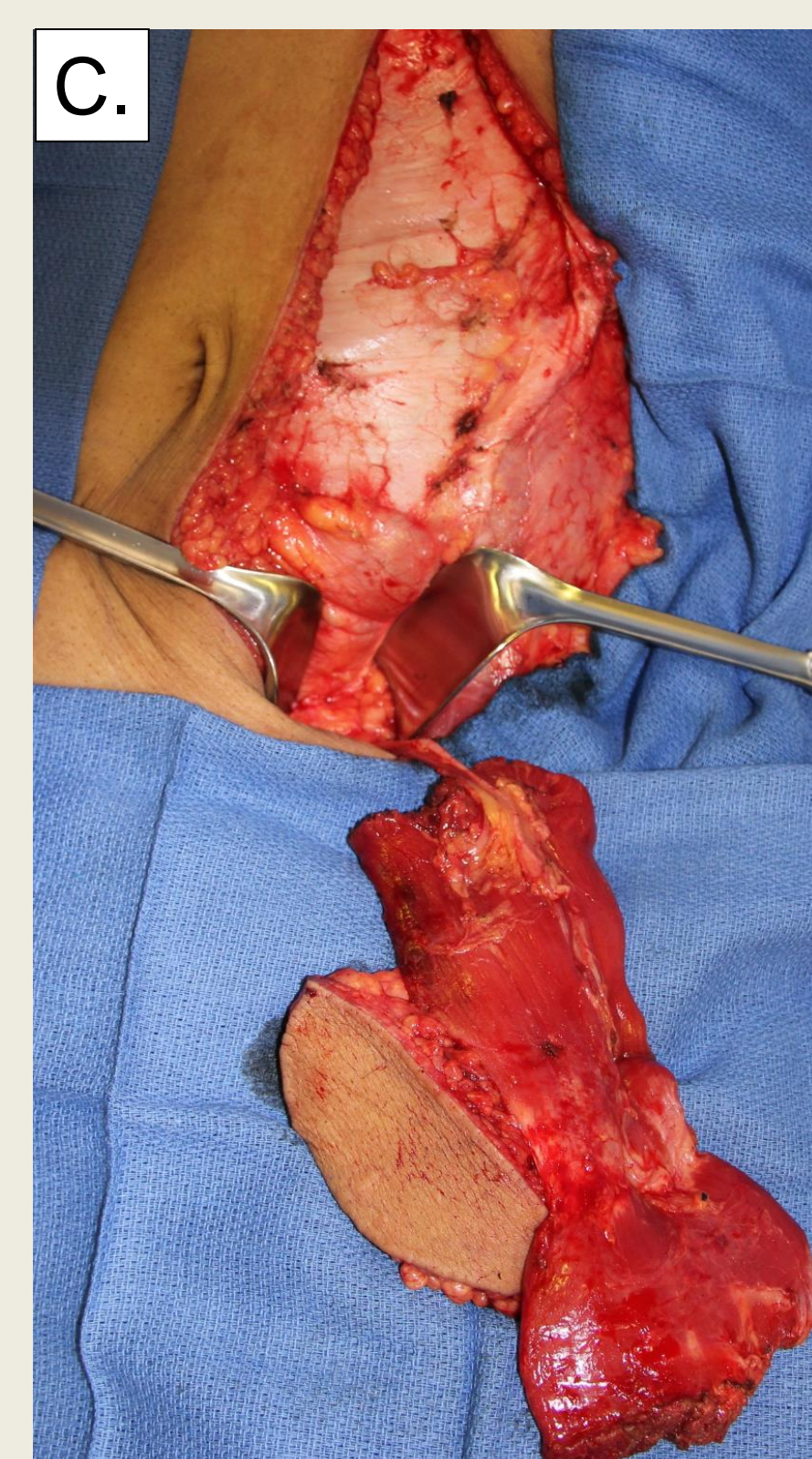
- (1) cellulitis
- (3) seroma

#### Hernia Formation

- (3) 3.4%

#### Abdominal Dehiscence

- (1) 1.1%



C. Typical appearance of VRAM flap harvest resulting in anterior rectus fascial defect.



D. Repair of the anterior rectus fascial defect with acellular dermal matrix to facilitate tension free closure.

## DISCUSSION

- Availability of a skin paddle and composite tissue of the VRAM flap allows versatile reconstruction of large volume head and neck defects.
- Despite the extensive dissection a VRAM flap requires for harvest, complications rates (hernia, hematoma, seroma, wound dehiscence) were comparable to the reported rates in patient undergoing TRAM flap breast reconstruction.
- Reinforcement of the abdominal wall and closure with either acellular dermal matrix or surgical mesh to provide tension free closure did not appear to impact the risk of donor-site complications.
- Lack of significance may be due to the sample size and/or the retrospective analysis of the data.
- Muscle and fascial sparing methods of flap harvest based on the myocutaneous perforators - Deep Inferior Epigastric Perforator (DIEP) artery flap - may potentially allow for less donor site morbidity of the rectus abdominis free flap and have improved functional results.

## CONCLUSIONS

- Development of hernia or abdominal dehiscence following rectus abdominis free flap harvest is rare in the head and neck population.
- When primary tension free closure of the anterior abdominal wall is not possible, a mesh can be used to reinforce the anterior abdominal wall.
- The use of reinforcement for tension free closure of the rectus abdominis donor site does not significantly reduce the rate of hernia formation.

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