



AMERICAN SOCIETY OF
PLASTIC SURGEONS*



Plastic Surgery The Meeting 2014

Cone-shaped Anterolateral Thigh Flap for Heel Reconstruction

Yu-Hao Huang, M.D., Shu-Hung Huang, M.D.

Kaohsiung Medical University Hospital, Taiwan

2014.10.10~14 Annual Meeting of ASPS in Chicago



Nothing to disclose

Background

- Plantar heel full thickness defect → challenge
- Various reconstruction option
 - Skin graft → less favorable
 - Moderate defect → Local flap (ex. V-Y flap, instep flap)
 - Large defect → Free flap (ex. ALT, RFFF, LD, VL, Lat. Arm, Scapular, Rectus abdominis... etc.)

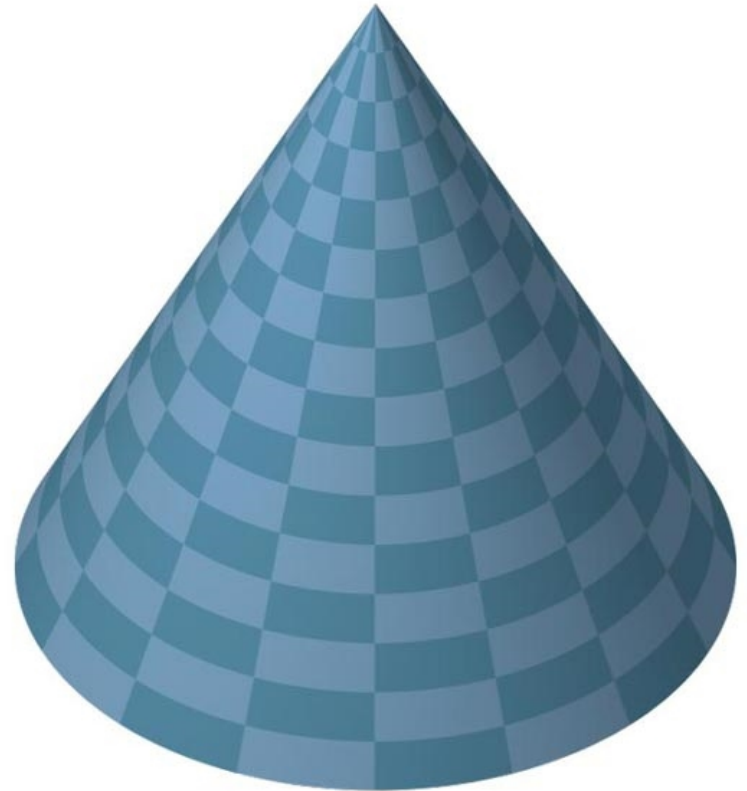
~~ Robin P et al. *Plas Reconstr Surg.* 2007 Mar

~~ Mourougayan V et al. *Ann Plast Surg.* 2006 Feb

~~ Hollenbeck ST et al. *Plast Reconstr Surg.* 2010 Mar

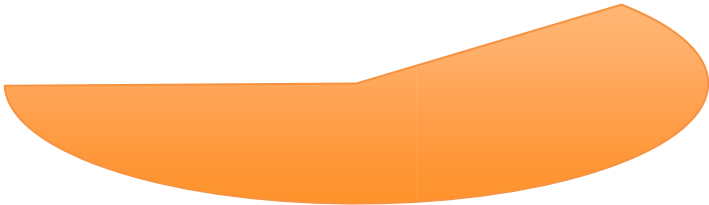
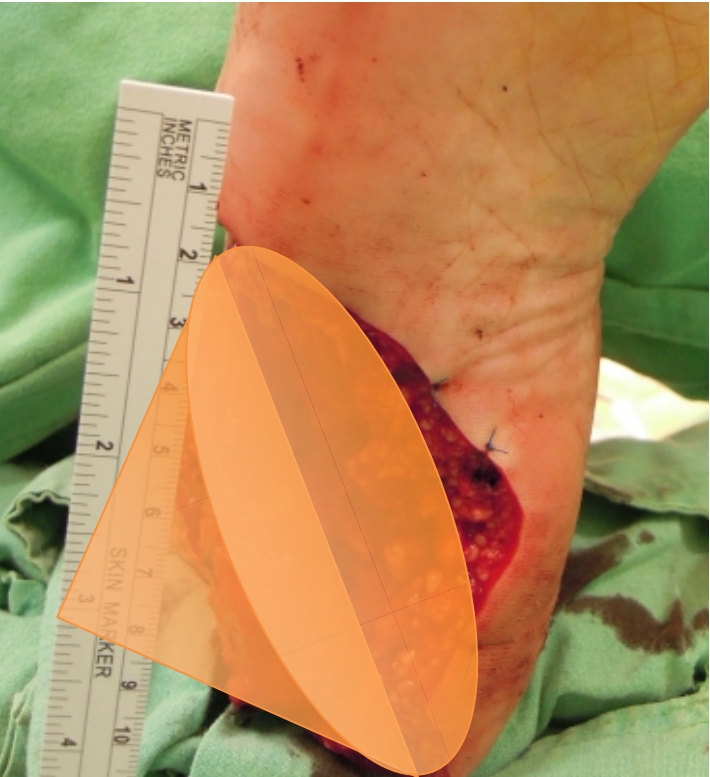
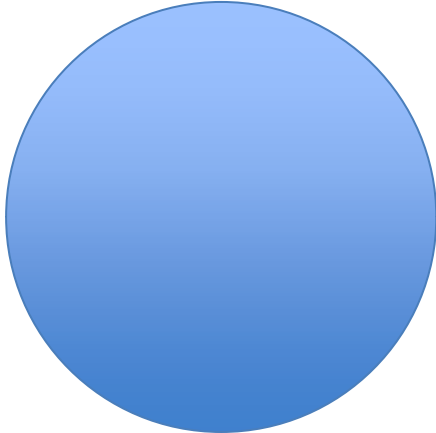
Materials & Methods

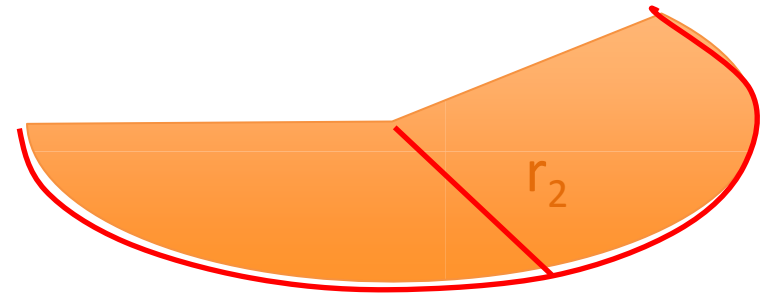
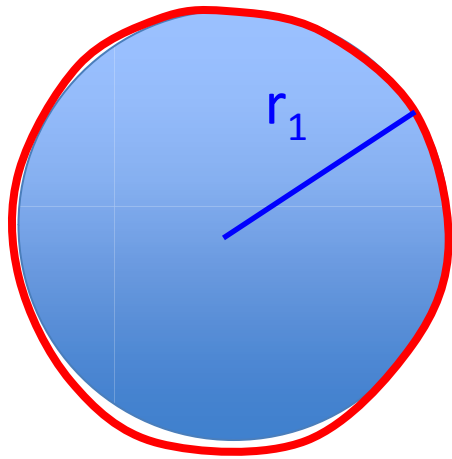
- From 2012.5~2013.12
- 5 heel reconstruction
- Retrospective review



Pt No.	Age & Sex	Co-morbidity	Cause of defect	Size of defect	Size of flap	Post op event
1	50 y/o F	Nil	Left heel nodular melanoma	7x6	9x4	nil
2	61 y/o F	Nil	Left heel acral melanoma	6x6	11X4	Venous thrombosis
3	79 y/o M	Nil	Right heel acral melanoma	11X8	18X6	nil
4	69 y/o M	DM, HTN, CKD	Left heel acral melanoma	7X7	15X4	Distal partial ischemia
5	20 y/o M	Neuropathy Paraplegia	Guillain-Barre syndrome	7x6	10x4	nil

Design idea





$$\text{Circumference} = r_1 \times 2 \times \pi = \text{Arc length} = r_2 \times 2 \times \pi \times \frac{2}{3}$$

$$r_1 : r_2 = 2 : 3$$

Donor site defect width = $2r_1 : r_2 = 4 : 3$

Decrease 25% width in new design

Case presentation

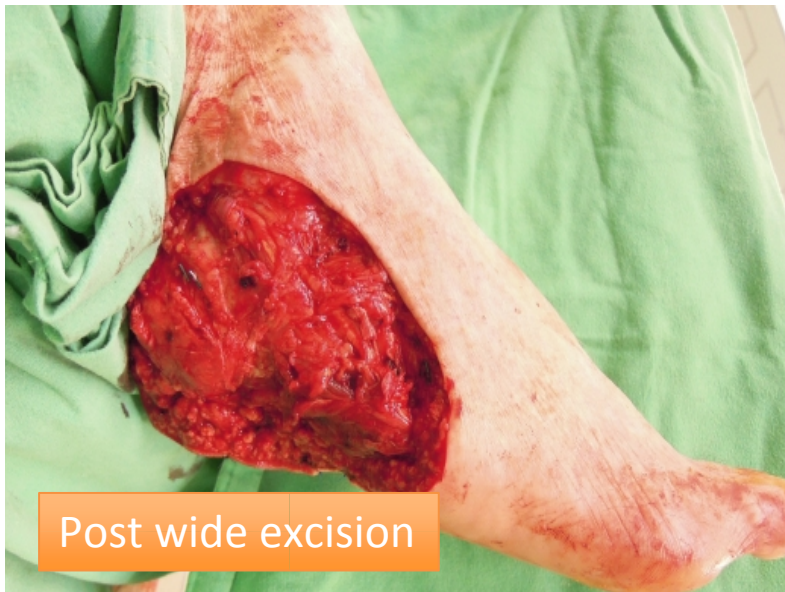
79 y/o male
right heel melanoma



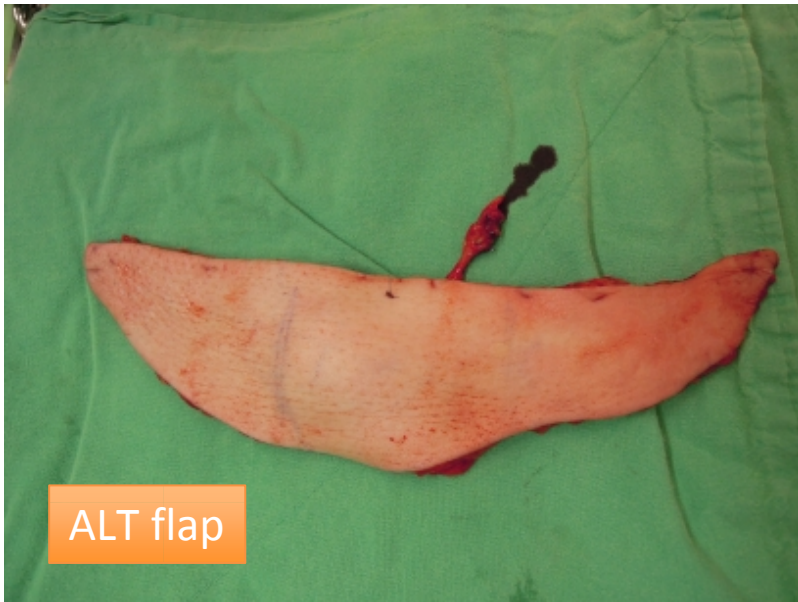
Pre-op



Post wide excision



Post wide excision



ALT flap



Cone-shaped ALT flap



Intra-operative



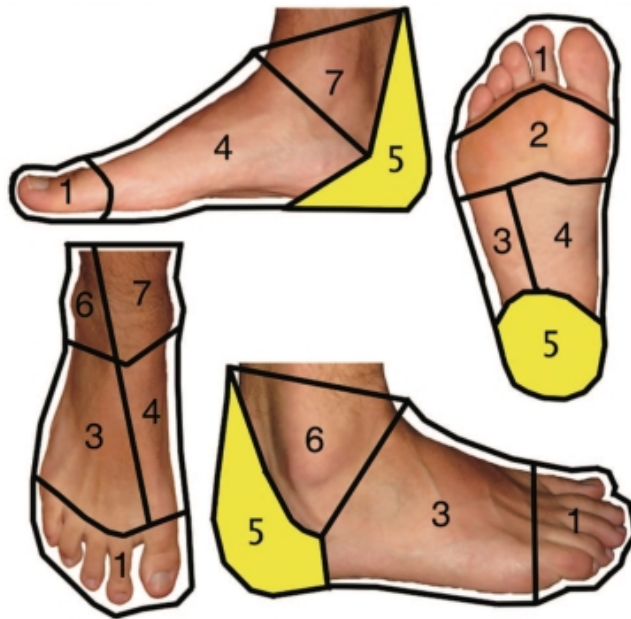
Post-op 6 months

Results

- All flaps were survival
- One postoperative vein thrombosis and further salvage procedure
- One flap distal partial necrosis and further FTSG

Discussion

- Hollenbeck et al. → Subunit principle
- Heel → high functional, low aesthetic, durable and mild bulky



- Free tissue: ALT > gracilis + STSG > LD > scapular > Lat. arm > RFFF

~~ Hollenbeck ST et al. *Plast Reconstr Surg.* 2010 Mar

Our advantages

- 3D-contouring reconstruction in one flap
- More fit & less bulky
- Few revision procedures
- Donor site primary closure easier
 - ➔ 6-10cm can primarily close
 - ➔ width-to-thigh circumference ratio <16%

Conclusion

- Cone-shaped ALT flap for heel reconstruction
 - Alternative modified design
 - Safe and reproducible
- Decrease donor site defect width about 25%

Thanks...

