

Double-paddle peroneal flap design for cutaneous monitoring in hypopharyngeal reconstruction

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Goals of Surgery

- Restoration of swallowing
- Avoidance of complication
- Restoration of speech

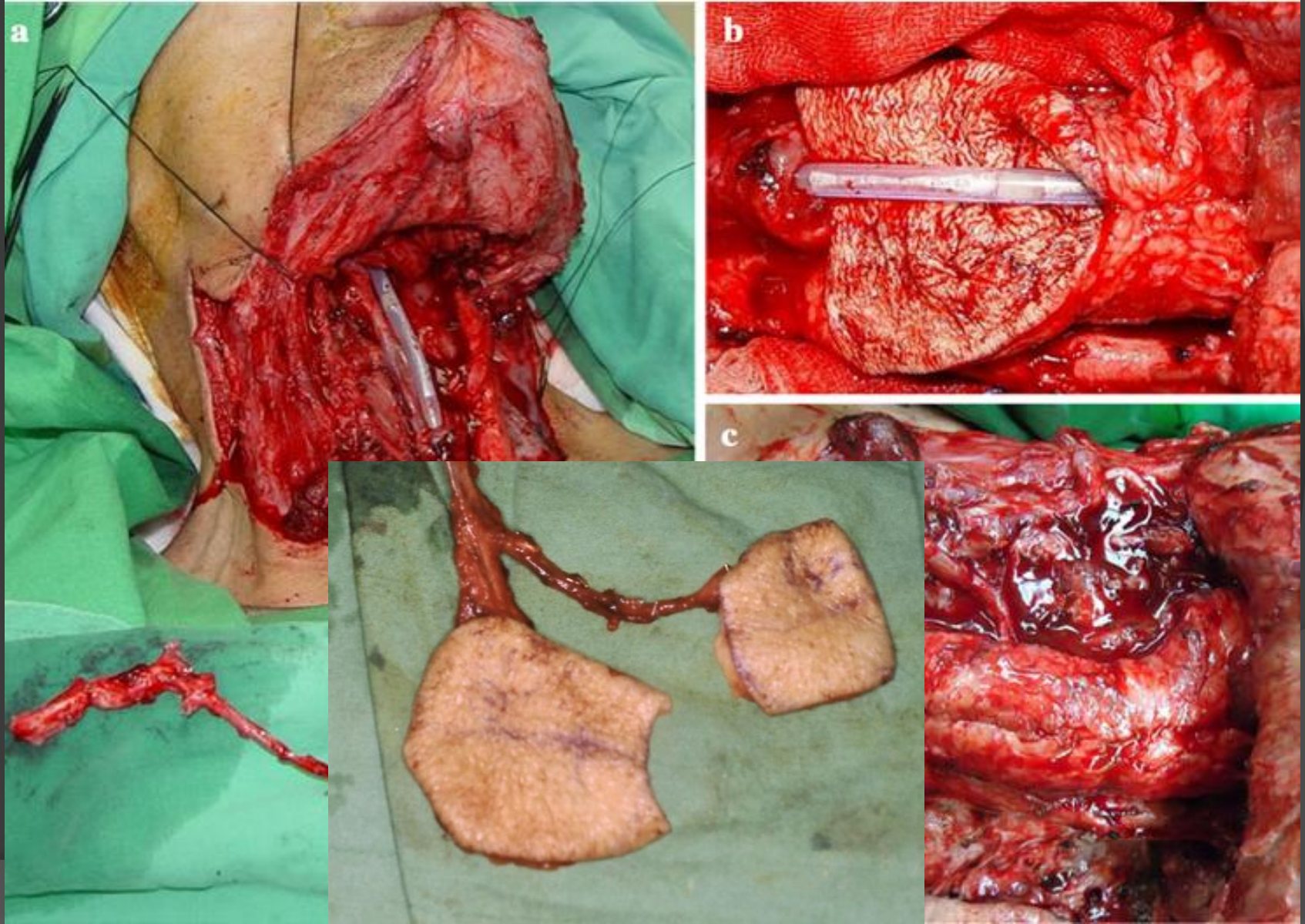
Reconstructive microsurgery

- ⦿ Jejunal
- ⦿ Radial forearm
- ⦿ ALT
- ⦿ Peroneal

Monitoring buried flap

- Internal & color duplex sonography
- Nearinfrared spectroscopy
- External thermometry
- Internal & external Doppler
- Standard pulse oximetry
- External monitoring flap

Double paddle design !?



Material & Methods

- 9 flaps in 2013~2015
- Feeding artery: Sup. thyroid a.
- Recipient vein: Ext. & Int. jugular v.
- Montgomery stent use.



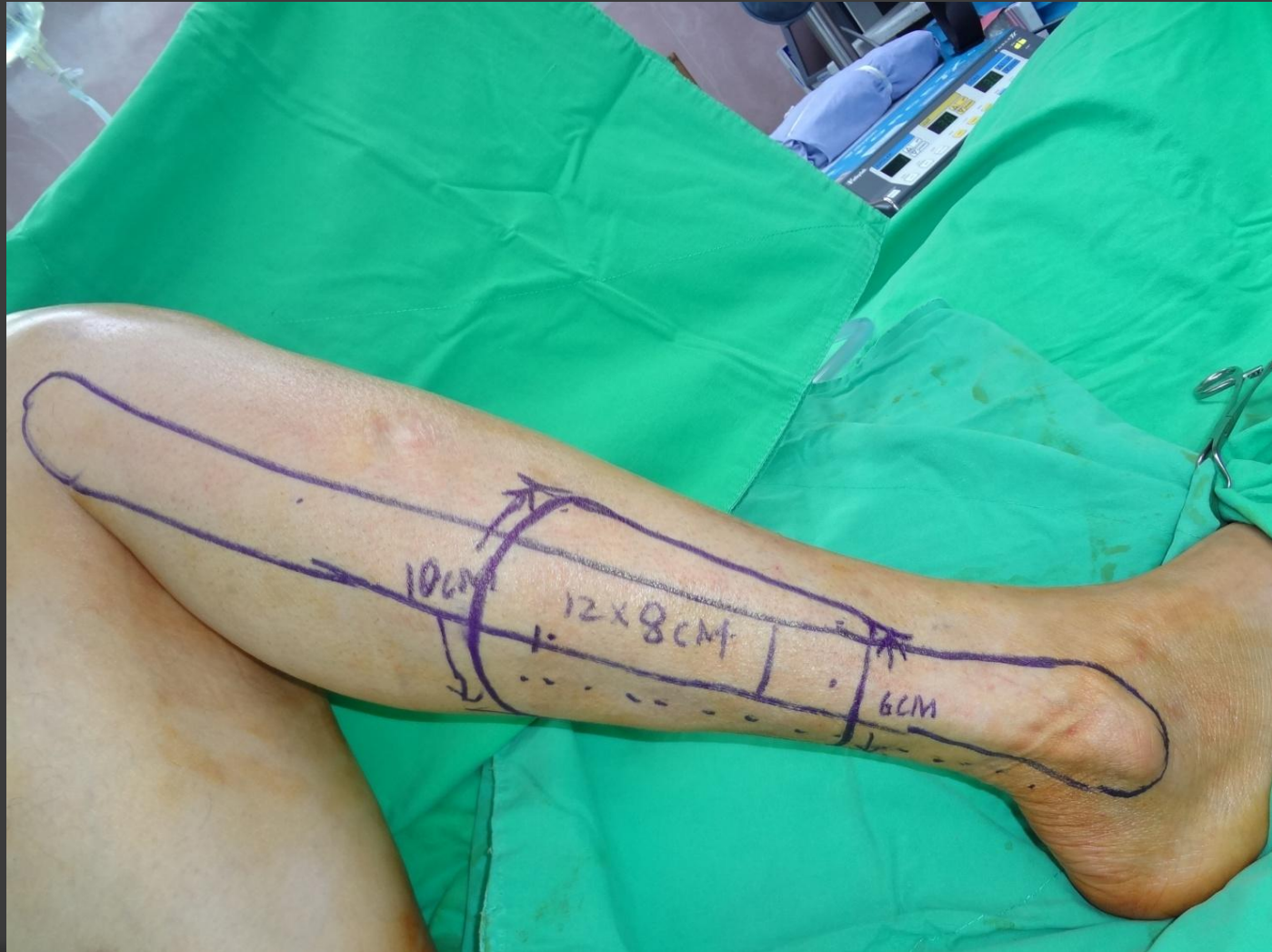
Patient series

Case	Age/ Sex	TNM Stage	Flap size (cm ²) Skin paddle	Flap size (cm ²) Inner paddle	Shape of defect	Post op stay (d)	Time till oral intake (d)	Follow-up duration (mo)	Type of diet attained	Complications
1	49/M	T4aN1M0 / IV	3x2	12x8	Patch	20	13	27mo	Oral solid	N
2	54/M	T4aN2bM0/ IV	7 x 11.5	13 x 11.5	Tube	95	19	24mo	Oral fluid → NG diet	Fistula
3	43/M	T4N2cM0/ IV	9 x 8	9 x 9	Patch	18	25	5mo	NG diet	Stenosis
4	58/M	T3N1M0 / IV	5x11	18x11	Tube	47	26	16mo	Oral water	N
5	49/M	T3N2cM0 / IV	3x7	10x10	Tube	36	25	7mo	Oral soft	N
6	61/M	T3N2bM0/ IV	FHL	18x4	Tube	45	28	17mo	NG diet	N
7	47/M	T3N0M0/III	12x7	10x7	Tube	28	25	12mo	Oral soft	Partial flap necrosis
8	64/M	T4aN2bM0 / IV	3 x 2	10 x6	Tube	17	14	6mo	Oral solid	N
9	59/M	T3N0M0 / III	3 x 5	8x5	Tube	53	14	6mo	Oral fluid → NG diet	N

Patient summary

Variables	Value of patients	(%)
Patients		
Male/female	9/0	100/0
Mean age (range), y	51y (43–64)y	
Tumor stage		
T3/T4	5/4	56/44
Stage III/IV	2/7	22/78
Flap size (cm²)		
Shape of defect patch/tube	2/7	22/78
Skin paddle	3*2~7*12	
Inner paddle	8*5~18*11	
Post-op stay (d)	17~95	
Time till oral intake (d)	13~28	
Follow-up duration (mo)	5~27	
Functional result		
Diet		
Solid/Soft/Liquid/NG	2/2/1/4	22/22/11/45
Complications		
Total flap loss	0	0
Total inner or outer paddle loss	0	0
Partial/superficial necrosis	1	11
Stenosis	1	11
Fistula formation	1	11

Case1:Dome for wider diameter



Hypopharynx deficit



49M Total
laryngectomy
partial
pharyngectomy
pT4aN1M0

Flap inset



Immediate post-op appearance



Result

- Flap harvest: 90 minutes. (80-100)
- Duration of ischemia: 40–50 minutes.
- Hospitalization: 21 days (17–95).
- Follow-up: 12 months (6–27).

Double Skin Paddle advantage

- Easy & accuracy in design
- Easy inset in double skin paddle
- De-epithelization is unnecessary, smaller flap needed
- Time-saving

Disadvantage

- Tedious dissection
- Anatomic variations
- Skin grafting in donor site
- Fibrosis of FHL muscle
- Restricted in PAOD

Conclusion



- First design using peroneal cutaneous monitoring paddle.
- Direct monitoring in buried neohypopharynx.
- Functional & Permanent cosmetic result is good.