



THE COLLEGE OF SURGEONS OF HONG KONG

REPORT ON RESEARCH PROJECT

★ No HANDWRITTEN research report submission will be accepted.

★ Please fill in ALL the blanks in BLOCK LETTERS. Missing any items may lead to failure of processing your research report.

SECTION A : PERSONAL PARTICULARS OF HST TRAINEE

Name of Trainee: TONG YU TAI BST HST Specialty: PLASTIC SURGERY
 Commencing date of Training: 01.07.2017 Principal Hospital: TMH
 Current Training Period : 01.01.2019 to 30.06.2019 Training Hospital: TMH

SECTION B : RESEARCH PROJECT

Title: Comparison of Miniplates and Reconstruction Plates in Fibular Flap Reconstruction of the Mandible: 10-year Experience of a Single Institute

Principal investigator: TONG YU TAI
 Co-investigators: _____

Role of trainee (%):	
Conceptualization & design	<u>80</u>
Conduct of Study	<u>100</u>
Data collection	<u>100</u>
Data analysis	<u>95</u>
Abstract / Manuscript writing up	<u>100</u>
<input type="checkbox"/> Clinical Study <input type="checkbox"/> Laboratory Study	

Duration of project: 2008-2017
 Current Status: Ongoing Completed
 Type of Research: Case Report Literature Review
 Others (Please Specify) Retrospective Review
 Have you ever submitted this research project (Ongoing) with the same title before? Yes No

Abstract (The content should include Background, Aim of study, Method, Result and Conclusion.)

*You are NOT required to include the result and conclusion in the abstract if your project is still ongoing.

*A key reference list should be included in your research report. The total number of references should not be more than 5.

Background

Mandibular reconstruction using free fibular flaps can be fixed with different plating techniques. The use of miniplates or reconstruction plates for fixation has been described in the literature. Each of the plating techniques has different characteristics that provide theoretical advantages and disadvantages in mandibular fixation.

Aim of study

We wanted to compare outcomes between the 2 methods of fixation in mandibular reconstruction with fibular flap.

Method

A retrospective review of 48 patients undergoing free fibular reconstruction of segmental mandibular defects (n=50) in Tuen Mun Hospital during the period of 2008-2017 was performed. Two of the patients had second reconstruction due to flap failure and tumour recurrence respectively. Characteristic data and complication rates were recorded. We compared patients who had fibular reconstruction of their mandibular defect with miniplates (n = 31) with those using reconstruction plates (n = 19).

Result

Average follow-up was 37.1 months. There was no significant difference with regards to sex (P = 0.26), smoking (P = 0.77), history of radiation (P=0.55), defect length (P = 0.87) or types of defect according to Jewer's classification (P=0.50) between the 2 groups. However, the follow-up was longer (45.7+/-34.9 months versus 22.4+/-13.5 months, P=0.002), the age was younger (56.6+/-16.2 versus 66.6+/-15.3, P=0.04) and the number of osteotomies was smaller (1.07+/-0.87 versus 1.78 +/-0.94, P=0.01) in the miniplates groups.

There was longer warm ischemic time (169 +/- 38 minutes versus 131+/- 27 minutes, P=0.001), higher rate of late complications (32.3 percent versus 5.6 percent, P=0.04) and higher rate of malocclusion (57.1 percent versus 11.1 percent, P=0.04) in the miniplate groups. 81.8% of late complications developed within 8 months after reconstruction.

No statistically significant difference was identified when comparing miniplates and reconstruction plates with regards to overall complication rates (45.2 versus 26.3 percent, P=0.24), flap failure (0 percent versus 5.3 percent, P=0.38), salvageable venous congestion (9.7 percent versus 5.6 percent, P=1.00), partial skin necrosis (6.5 percent versus 5.6 percent, P=1.00), removal of hardware (23.3 percent vs 5.3 percent P=0.13), plate extrusion (6.7 percent versus 0 percent, P=0.53), malunion or nonunion (6.5 percent versus 0 percent, P=0.53), plate fracture (6.5 percent versus 0 percent, P=0.53), screw loosening (9.7 percent versus 5.6 percent, P=1.00), osteonecrosis (12.9 percent versus 0 percent, P=0.28) and osteomyelitis (3.2 percent versus 5.6 percent, P=1.00).

Conclusion

We showed that there was longer warm ischemic time, higher rates of late complications and malocclusion when using miniplates versus reconstruction plates while there was no significant difference in overall complication rates, and all other specific complications.

Reference

Robey AB, Spann ML, McAuliff TM, Meza JL, Hollins RR, Johnson PJ. Comparison of miniplates and reconstruction plates in fibular flap reconstruction of the mandible. *Plast Reconstr Surg.* 2008 Dec;122(6):1733-8.
Liu SP, Cai ZG, Zhang J, Zhang JG, Zhang Y. Stability and complications of miniplates for mandibular reconstruction with a fibular graft: outcomes for 544 patients. *Br J Oral Maxillofac Surg.* 2016 Jun;54(5):496-500.
Al-Bustani S, Austin GK, Ambrose EC, Miller J, Hackman TG, Halvorson EG. Miniplates Versus Reconstruction Bars for Oncologic Free Fibula Flap Mandible Reconstruction. *Ann Plast Surg.* 2016 Sep;77(3):314-7.

SECTION C : COMMENTS FROM TRAINEE / SUPERVISOR

Declaration: I declare that this research project is not, or has not been, submitted by another trainee

Name of Trainee: TONG YU TAI

Date: 8/2/2019

Name of Supervisor: Carol Wang MD

Date: 8/2/2019

Revised on Dec 2017