

นิพนธ์ต้นฉบับ

Original Article

Digital Replantations with One-Artery and One-Vein Anastomosis

รายงานการต่อนิ้วมือ 10 รายใน ร.พ.ราชบุรี

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ABSTRACT

Digital replantations with one-artery and one-vein anastomosis technique were performed in 10 patients. This modified technique costs less operative time and expense and still gives acceptable result (90 percent success rate).

Key words : digital replantation

บทคัดย่อ

รายงานการต่อนิ้วมือ 10 รายใน ร.พ.ราชบุรีโดยวิธีต่อเส้นเลือดแดง 1 เส้นและเส้นเลือดดำ 1 เส้น ทำให้ประหยัดเวลาในการผ่าตัดและค่าใช้จ่าย โดยให้ผลสำเร็จร้อยละ 90

Introduction

Replantation describes the reattachment of a completely amputated part by restoration of arterial inflow and venous outflow.¹ The general recommendation is to repair two or three veins and one or two arteries for each part.¹⁻³ But this requires more time and effort of surgeon, especially for novice.

Operative procedures will be simplified with acceptable outcome if only one-artery and one-vein anastomosis are done. The surgical expense is lesser. We wish to present our study on 10 cases as

followed.

Material and Method

Ten consecutive cases of digit replantation were done at Plastic Surgical Unit of Ratchaburi Hospital from April 1998 to July 2001. All cases were treated initially as trauma to exclude life threatening conditions and scheduled for digital replantation. Cephalosporin and tetanus toxoid were given.

Bone was shortened and fixed with K-wire. The flexor tendon and bilateral digital nerves were

repaired. One-artery anastomosis was done and volar skin was closed. The hand was turned over and extensor tendon was repaired. Only one good bleeding vein of amputated part was identified and end-to-end anastomosis was done with 10-0 nylon suture. The patency of each arterial and venous anastomosis was tested with the empty and refill test. Return of tissue turgor and color to the pulp and capillary refilling in the distal phalanx of each case indicated successful replantation. Maintenance of adequate hydration and circulation monitoring to

distal phalanges of the patients were very important in this study. Dextran 40 was given at the time of vascular anastomosis until the fifth postoperative day at rate of 10 ml/kg of body weight/day. Oral aspirin (6 mg/kg of body weight/day) was given to the patients for 3 weeks. Smoking was strictly prohibited. Again at the 6th week post-operation, all cases were evaluated at the outpatient department and K-wire was removed.

Result

Table 1 Details of each cases

Patient Number	Sex	Age (years)	Level of injury	Type of injury	Ischemic time (hr.)	Operative time (hr.)	Result
1.	M	12	PIP, 5 th , Lt	Avulsion	2 : 30	4 : 30	Success
2.	F	23	DIP, 4 th , Rt	Crush	3 : 40	4 : 50	Success
3.	F	32	MP, 3 rd , Rt	Crush	7 : 25	4 : 00	Failure
4.	M	4	MP, 5 th , Lt	Crush	2 : 25	3 : 15	Success
5.	M	44	DP, 3 rd , Rt	Crush	7 : 00	2 : 15	Success
6.	M	20	DIP, 2 nd , Lt	Sharp	3 : 00	3 : 20	Success
7.	M	22	PP, 1 st , Lt	Sharp	3 : 30	4 : 00	Success
8.	M	25	PP, 1 st , Lt	Crush	5 : 00	4 : 00	Success
9.	F	19	PIP, 4 th , Rt	Crush	9 : 00	2 : 10	Success
10.	M	44	PP, 1 st , Rt	Sharp	9 : 00	4 : 30	Success
					mean = 5 : 15 hr.	mean = 3 : 43 hr.	90% success

DP = distal phalanx, DIP = distal interphalangeal joint, MP = middle phalanx,

PIP = proximal interphalangeal joint, PP = proximal phalanx

M = male, F = female

There were 10 digital replantations in 10 patients with 8 adults and 2 children. The youngest was 4 years old; the oldest was 44 years old. The mean ischemic time was 5 hours and 15 minutes (range from 2 : 25 to 9 : 00 hours). The mean operative time was 3 hours 43 minutes (range from 2 : 10 to 4 : 50 hours). Amputation at PP level was found in only one case. Six cases were crush injury, and one case had treatment failure. Success rate was 90 percents.

Discussion

Digital replantation in adult is indicated in amputation of thumb, multiple digits and single digit distal to sublimis insertion. Replantation of amputated part of a child at any level should be attempted even with the lower survival rate, the functional outcome is generally better than in adult.⁶ Avulsion injury gives poor result but should be attempted in a child whose inal result is better than that of an adult. As in patient no.1, the operative time was 4 : 30 hours, longer than average, because of the difficulty in identifying avulsed structure and the anastomosis was done even though digital vessels were smaller than 1 mm. in diameter.

The replantation of single digit proximal to sublimis insertion in adults is generally not advised because of the limited excursion of the tendon that frequently results.^{1-3,6} The possible post-operative functional deficit was explained to this female patient (no. 9), but she still insisted to perform the operation for individual cosmetic reason.

Operation in one patient (no. 3) resulted in failure from severely crushed nature of accident.

So the closure of amputated stump with bilateral V-Y advancement flap were performed.

The success rate in this study was 90 percent and comparable to other study,⁴ but the number of our patients was still small. With a large number of patients in the future, the result will be reported again.

The mean operative time was 3 hours 43 minutes. Replantation is quite a long, tedious and demanding emergency operation but should be encouraged to be done at all perform hospital in Thailand.

Conclusion

The simplified digit replantations in this study emphasized our goal in repairing only one artery and one vein and was performed in 10 cases. Average operative time was 3 : 43 hours. This simplified operation costs less time and effort of surgeon.

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