

## Microsurgical Replantation of A Partial Ear with Arteriole Anastomosis

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### — Abstract —

Ear reconstruction is very difficult to perform and often results in a devastating deformity. The use of microsurgical replantation techniques has allowed very favorable anesthetic results. We report a case of a partial ear replantation without venous repair with the use of medicinal leeches to decompress the acute venous congestion during the postoperative care. The medicinal leech therapy can be very useful in a partial ear replantation in cases with no venous repair.

**Key words** : Replantation, Medicinal leech

The auricle, even if partially lost, is difficult to reconstruct surgically. Therefore, the application of microsurgical anastomosis of amputated ears has revolutionized the results of salvage in this situation and microsurgical replantation is very important. Because an ear is richly vascularized and has relatively large vessels extending through its periphery, the application of microsurgical technique to allow replantation of partial amputated ears can be successfully done. Although there have been several reports to microsurgically replanted ears, there are relatively few cases in the literature reporting successful ear replantation. This is most likely owing to the small size of the vessels available for anastomosis.

In the totally avulsed ear, the arterial and venous anastomosis can be done by using the

developed skillful microsurgical technique.

But, most veins in the head with ears are small, very thin, and fragile, therefore partial auricular replantation has always been a challenge because of the lack of suitable veins for anastomosis. The replantation of the partial amputated ear often fails due to venous congestion.

The subject of discuss of partial ear replantation has been the value of performing solution of venous congestion. In the totally avulsed ear, the successful venous anastomosis can be done, even if venous repair is performed and the risk of thrombosis is very high<sup>1,2</sup>. In the partial amputated ear, the performing venous anastomosis is very difficult. It can be relieved venous congestion and performed venous drainage by using medicinal leeches. The

application of medicinal leeches to the replanted stump has been used for salvage procedure after venous anastomotic failure<sup>4</sup>. The venous decompression by using the medicinal leeches is done, it is performed the venous connections to become established between the avulsed ear and recipient bed<sup>5</sup>.

The purpose of the article is to report a case of partial avulsed ear replantation that was successful with arteriole anastomosis.

## CASE REPORT

The patient was a 46-years-old man who suffered an amputation of his right partial auricle. He arrived at our emergency room approximately 6 hours after sustaining glass injury.

On physical examination, the complete avulsion of the upper part of the ear and partial scalp was noted. At the lobule, lacerated wound was noted (Fig. 1).

He was immediately taken to the operating room, where exploration revealed a single artery (lower subbranch of upper branch of superficial temporal artery) on the anterior aspect of the ear available for anastomosis. After primary repair of the ear cartilage and tacking suture of the soft tissue, this small arteriole was repaired using interrupted 11-0 nylon sutures. The arteriole and capillary trees (reperfusion sign) was noted within the replanted part after release of the microvascular approximator, but suitable veins for repair could not be detected. And then the skin of the posterior and anterior aspect of replanted partial ear was closed with interrupted 6.0 nylon sutures (Fig. 2).

We started the postoperative care on our standard microvascular anastomotic pharmacological regimen: ASA 300mg PO qd for 14 days, LMW dextran 500cc/24hrs for 5days,

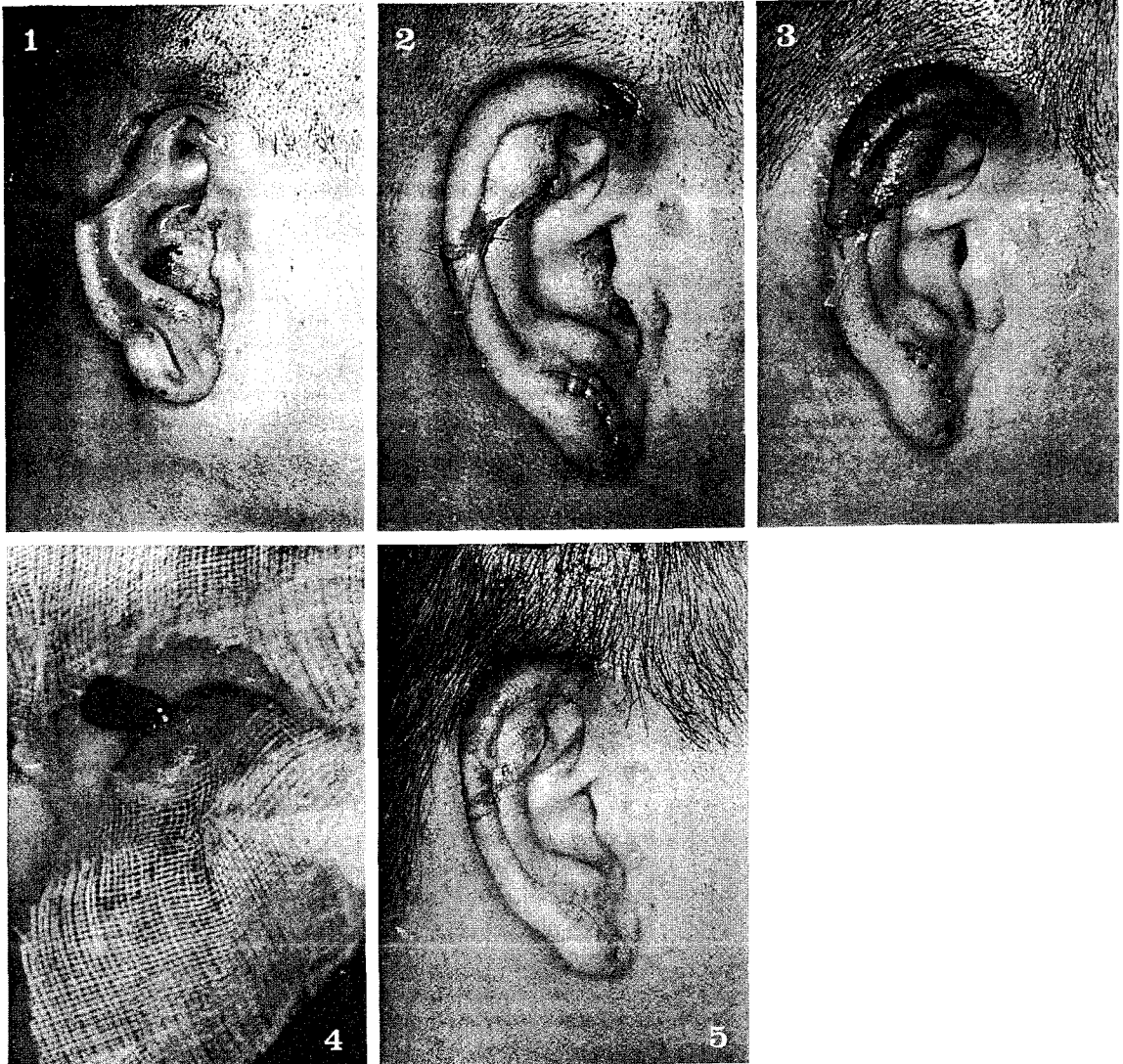
Heparin 15,000u+P/S 1000cc/day for 7days, Chlorpromazine 100mg po qd for 7 days, and MS 25mg bid for 3 days. On the next day, the venous congestion was noted at the replanted part (Fig. 3). Medicinal leech was applied to relieve venous congestion. The initial schedule of leech application was every 3 hours and as needed to decompress venous congestion (Fig. 4). The interval between decompression by using leech was gradually lengthened by postoperative day 7, the replanted ear no longer required decompression by using leech. The replanted venous drainage was maintained by the newly established venous outflow from the replanted ear to its bed. During the period of leeches therapy, he was not required transfusion of blood.

On the postoperative day 14, he was discharged with completely viable replanted ear (Fig. 5). It was satisfied with him that the microvascular anastomosis and postoperative care was done successful.

## DISCUSSION

There are many methods for reconstruction of the amputated ear. The use of microsurgical techniques has afforded reconstructive surgeons a more reliable outcome in ear salvage after avulsion.

At the total ear amputation, the best results are with microsurgical replantation with both arterial inflow and venous outflow. But, it is more likely that no veins will be found with a partial ear avulsion than with a total ear amputation. Thus, it will be the patient with a partial ear avulsion who will require an arterial anastomosis followed by leech therapy. Leech therapy has been used successfully in case of digital replantation<sup>6</sup>, total scalp replantation<sup>7</sup>,



**Fig. 1.** The upper helix, scapha fossa, and crura of antihelix was avulsed. But, the triangular fossa was spared. At the lobule, lacerated wound was noted.

**Fig. 2.** The lower subbranch (arteriole) of upper branch of superficial temporal artery was repaired, and the reperfusion sign was noted within the replanted part. The skin was sutured with 6.0 nylon. At the lobule, the primary closure was done.

**Fig. 3.** Postoperative day 1, the replanted part was dark purple, edematous, and warm to the touch.

**Fig. 4.** Using an aseptic technique, the skin was injured with a 19-gauge needle to enhance leech attachment. A single leech was applied. After 2 days, leech was applied at less frequent intervals.

**Fig. 5.** Postoperative day 14, the replanted part was well survived.

replantation of the lip<sup>8)</sup>, and free tissue transfer<sup>9)</sup>. Leech therapy is indicated in clinical situations (dark purple discoloration, edema, and warmth) characterized by insufficient venous drainage with normal arterial

supply. Venous congestion causes the stasis of blood in the capillary beds that are normally drained by the affected veins. This results in tissue hypoxia, arterial thrombi and, tissue necrosis. Leech therapy can

prevent these complications by alleviating the pooled blood.

The drainage of the pooled venous blood by leeches allowed capillary bed perfusion in the affected tissue to continue while collateral venous structures developed. Leeches have two suckers that allow them to attach to the tissue from which they are feeding. Blood is sucked through their mouths, situated at the anterior sucker. And, leech saliva contains several substances: 1, An anesthetic substance makes the leech but painless. 2, histamine-like vasodilator increases blood flow to the site of feeding<sup>10</sup>. 3, the most important component of leech saliva is hirudin, a selective thrombin inhibitor<sup>11</sup>. The treatment of amputated ear is various methods. It is to examine the parts in the operating room under the microscope and attempt to dissect out the vessels. If no suitable vessels are seen on microscopic inspection, the pocket principle is used, and the amputated part is deepithelialized and buried. This technique has several advantages: technical ease and quicker recovery time. If a suitable artery is seen, it should be repaired using vein grafts if necessary. Once the amputated part is revascularized, the veins become apparent and should then be anastomosed. If no venous anastomosis is possible, partial deepithelialization is done active posterior part and rim of the ear at the operating room. Another method is medicinal leech therapy. The venous congestion is disappeared by intermittent use of medicinal leech for the postoperative care.

medicinal leeches are also useful in few other in surgeries for treating acute venous congestion.

## SUMMARY

Ear reconstruction is very difficult method and leaves a devastating deformity. The use of microsurgical replantation techniques has allowed very favorable aesthetic results.

We report a case of partial ear replantation without venous repair. And medicinal leeches were used to decompress the acute venous congestion in the postoperative care.

Medicinal leech therapy is the very important method when the venous repair is not done.

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