

## Case report

# Reconstruction of Massive Facial Avulsive Injury, Secondary to Animal Bite

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## Abstract

Management of facial soft tissue trauma requires complex reconstruction surgery. Animal bite on face is a common cause of facial tissue trauma with severe destruction. Evaluation of unit involvement is the first effort, followed by designation of reconstruction. In this case, we performed multiple reconstruction options.

**Keywords:** Animal bite, flap, graft, nasal reconstruction, tissue expander

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## Introduction

Approximately 600,000 animal bites require hospital treatment and estimates suggest that more than 200,000 occur every year in the US.<sup>1</sup> They require special attention that may not be sensitive to the standard antimicrobial therapy. Animal bite injuries involve children who are less than 12 years old.<sup>2</sup>

## Case report

A 7-year old boy presented with severe and multiple avulsion of facial injury with (wolf) animal bite in Charmahal Bakhtiari, referred to 15 Khordad Hospital from Esfahan University. After primary management, the patient was prepared for facial reconstruction. On physical examination: upper lip, RT lower eyelid totally distracted, total avulsion of nose and forehead.

Destruction of RT upper bucal mucosal lining

Avulsion of Rt forehead and Rt cheek.

Destruction of Rt and Lt vestibule of nose Destruction of Rt upper gingiva (Figure 1).



**Figure 1.** Pre-operation with RT facial side destruction.

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## Surgical method

Reconstruction of severe facial destruction was performed in a step by step fashion: forehead scalp flap was used for reconstruction of dorsal nose and split thickness skin graft for forehead. We used an extended cervicoshoulder flap (with delay) for upper lip (Figure 2). Cheek and nasal tip were reconstructed. L-shaped rib cartilage graft was used for dorsal caudal septal nose reconstruction (Figure 3). Full thickness skin graft was used in lower eyelid releasing scar tissue. Nostril reconstruction was accomplished with released scar and split thickness skin graft and preserved with tube (Figure 4). Tissue expander was used for forehead reconstruction. We used tissue expander in scalp for scalp defect reconstruction. Tissue expander was used in neck for scar contracture. The patient was followed up for 5 years (Figure 5).



**Figure 2.** Extended cervicoshoulder flap.



**Figure 3.** Rib - cartilage L- shaped graft.



Figure 4. Nostril reconstruction and nasal tube.



Figure 5. Final facial reconstruction.

## Discussion

The wound configuration, whether linear or stellate, is much less important to the final result than the degree of crush, contusion, and vascular compromise of the tissues. Animal bites are more likely unimicrobial with *pasteurella multocida* infection.<sup>4</sup> If the patient presents early after a bite with only mild to moderate signs of infection, amoxicillin/clavulanic acid, 875/125 mg bid or 500/125 tid with food, will cover most bite pathogens. If hospitalization is required, IV ampicillin/sulbactam or

cefazolin are recommended.<sup>2</sup>

Irrigation of the wound with copious amounts of saline and sharp debridement of devitalized tissue permit excision of the contaminated wound edges. Significant differences in the structure of facial skin in different areas require different methods for the repair and reconstruction.

As with any injury, the return to normal function and appearance is the essential aim of treatment. This is feasible with meticulous debridement and step-by-step surgical reconstruction.<sup>1</sup>

The face presents a humans identity to others.

Defects of the patient include:

- 1- Midface destruction (nose, cheek, Rt lower eyelid)
- 2- Forehead destruction
- 3- Upper lip defect

Reconstruction options, however, have been greatly expanded through the introduction of various procedures during last few decades.<sup>4</sup>

It is important preoperatively to evaluate the type of defect present and the anatomic location: a complete understanding of the function and esthetic relationship between normal face units is also indispensable. For example, the midface represents the control portion of the face and includes a wide area of soft tissues and musculature supported mainly by maxillary and zygomatic bony scaffolds.<sup>3,6</sup>

Three-dimensional structures of the midface consist of various elements, such as skin and subcutaneous, muscles, bones, and oronasal mucosal lining, which make reconstruction complex and difficult. It is made more difficult by the need for optional esthetic reconstruction as well as functional restoration.<sup>5</sup>

We preferred to use local and regional flap. Tissue expander, skin graft and Rib cartilage for reconstruction of severe defects of face.

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