



ELSEVIER



# Comparison of ultrasonography-assisted closed reduction with conventional closed reduction for the treatment of acute nasal fractures

Tetsuji Yabe <sup>a,\*</sup>, Tomoyuki Tsuda <sup>a</sup>, Shunsuke Hirose <sup>a</sup>,  
Toshiyuki Ozawa <sup>a</sup>, Katsuya Kawai <sup>b</sup>

<sup>a</sup> Department of Plastic and Reconstructive Surgery, Ishikiri-Seiki Hospital, 18-28, Yayoi-cho, Higashi-Osaka City, Osaka 579-8026, Japan

<sup>b</sup> Department of Plastic and Reconstructive Surgery, Graduate School of Medicine, Kyoto University, 54, Kawahara-cho Shogoin, Sakyo-ku, Kyoto 606-8507, Japan

Received 20 January 2014; accepted 20 May 2014

## KEYWORDS

Nasal fracture;  
Ultrasonography;  
Closed reduction;  
Intraoperative utility;  
Reoperation

**Summary** Ultrasonography has often been reported to be a useful tool in cases of nasal fracture, not only for diagnosing such fractures but also for intraoperatively assessing surgical outcomes. In this study, we examined the utility of ultrasonography for intraoperatively assessing the results of surgery for acute nasal fractures. In the conventional group, the outcome of each fracture reduction procedure was intraoperatively confirmed by visual inspection and palpation. In the ultrasound group, intraoperative ultrasonography was used to assess the condition of the fracture before and after closed reduction. The outcomes of the reduction procedures and the reoperation rate were compared between the two groups. According to computed tomography-based evaluations, there were no significant differences in the outcomes of the reduction procedures between the two groups ( $p > 0.05$ ). As for the reoperation rate, two patients (2.8%) in the conventional group underwent reoperations, but no patient (0%) required reoperations in the ultrasound group. However, the difference in the reoperation rate between the two groups was not significant ( $p > 0.05$ ). These results indicate that visual inspection and palpation are as reliable as ultrasonography for intraoperatively assessing the outcomes of surgery for acute nasal fractures. Surgeons should

\* Corresponding author. Department of Plastic Surgery, Ishikiri-Seiki Hospital, 18-28, Yayoi-cho, Higashi-Osaka City, Osaka 579-8026, Japan. Tel.: +81 0729 88 3121; fax: +81 0729 86 3860.

E-mail address: [yabe@msic.med.osaka-cu.ac.jp](mailto:yabe@msic.med.osaka-cu.ac.jp) (T. Yabe).

not depend on ultrasonography alone, but rather should use it in addition to visual inspection and palpation.

© 2014 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.

## Introduction

Recently, ultrasonography has often been reported to be useful in cases of facial fracture.<sup>1–8</sup> In most of these reports, ultrasonography was used for fracture diagnosis, but it can also be used to aid surgical operations. During an operation, it is very useful to be able to assess the outcome of a fracture reduction procedure with ultrasonography, especially in cases involving nasal fractures, which are usually repaired using closed reduction. At our institution, ultrasonography has been used to assess the condition of acute nasal fractures before and after closed reduction since April 2010. In this study, we compared ultrasonography-assisted closed reduction with conventional closed reduction as treatments for acute nasal fractures.

## Materials and methods

Between January 2008 and December 2009, 81 consecutive patients with acute nasal fractures underwent closed reduction without ultrasonography (conventional group), and between January 2011 and December 2012, 94 consecutive patients with acute nasal fractures underwent ultrasonography-assisted closed reduction (ultrasound group). The patients treated in 2010 were excluded because there was a period of trial and error during which the surgeons were thinking through how ultrasonography should be used to facilitate surgery for acute nasal fractures. In addition, the ultrasound apparatus was changed during that period. The outcomes of the reduction procedures and the reoperation rate were compared between the two groups. Statistical comparisons were performed using the chi-squared test, Student's *t*-test, Fisher's exact test, or Mann–Whitney test.

## Surgical procedure

Ketamine-induced (1 mg/kg) intravenous anesthesia was usually employed, but general anesthesia was induced in small children and adults who requested it. Before the reduction procedure, intranasal packing soaked in 1% lidocaine and 0.01% adrenalin was installed for a few minutes. The closed reduction was performed with Walsham forceps and a Langenbeck elevator. In the ultrasound group, we used ultrasonography (SonoSite S-Nerve™, FUJIFILM SonoSite, Inc., Tokyo, Japan) to intraoperatively assess the condition of each fracture before and after the closed reduction procedure. A transducer cover filled with physiological saline solution was used as the coupling agent (Figure 1). After the reduction procedure, intranasal

packing was inserted, and an external splint was applied to support the bone fragment. The gauze used for the intranasal packing was left in place for 4 or 5 days, and the external splint was applied for 2 weeks.

## Classification of acute nasal fractures

Using a previously reported classification system,<sup>9</sup> the nasal fractures were categorized into the following five types based on computed tomography (CT) images and lateral view X-rays:

Unilateral type (U type): Unilateral nasal bone displacement but no posterior displacement (Figure 2).

Bilateral type (B type): Bilateral nasal bone displacement but no posterior displacement (Figure 3).

Frontal type (F type): Posterior nasal bone displacement but no lateral displacement (Figure 4).

Laterofrontal type (L type): Both bilateral nasal bone displacement and posterior displacement (Figure 5).

Comminuted type (C type): The nasal bone had been broken into several pieces, and its shape had been markedly distorted (Figure 6).

## Evaluation of the outcomes of the reduction procedures

The outcomes of the reduction procedures were evaluated using postoperative CT scans and lateral view X-rays and were classified as follows



**Figure 1** Intraoperative evaluation with ultrasonography. A transducer cover filled with physiological saline solution was used as the coupling agent.

Download English Version:

<https://daneshyari.com/en/article/6214343>

Download Persian Version:

<https://daneshyari.com/article/6214343>

[Daneshyari.com](https://daneshyari.com)