# OUTCOMES OF TOTAL TEMPOROMANDIBULAR JOINT REPLACEMENT WITHOUT A SUBMANDIBULAR INCISION

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#### INTRODUCTION

Temporomandibular joint replacement is a well-accepted and successful treatment option for advanced pathology of the temporomandibular joint. A total joint replacement (TJR) is typically described using a pre-auricular/endaural and submandibular incision. Facial nerve paralysis is a known complication of TJR, and the marginal mandibular branch is at risk during the submandibular approach, potentially leading to denervation of the depressor anguli oris muscle.

Endoscopic assistance is increasing in its use in Oral and Maxillofacial Surgery. Recently, we described an endoscopic-assisted technique for TJR through the endaural incision without the need for a submandibular incision (1). This aims to be less invasive, eliminate the submandibular scar, and decrease the incidence of facial nerve weakness, particularly the submandibular branch.

#### OBJECTIVE

To report the incidence of facial nerve weakness, infection and difference in mouth opening following endoscopic assisted TJR without a submandibular incision.

#### **METHOD**

All patients who underwent a TJR without a submandibular incision in 2019 and 2020 were included in this study. Surgeries were performed by the author using the same technique described (1). This technique allows TJR to be carried out endoscopically through only the endaural incison with the use of a transbuccal trochar. Facial nerve weakness was recorded within I day of surgery, and followed-up until complete resolution. Pre-operative mouth opening was measured at the initial consultation, and at follow-up 2 weeks post-operatively, along with lateral excursive movements.



Figure I. A) insertion of screws via transbuccal approach. B) view from endoscope as screws are inserted. C) post-operative panoramic



# RESULTS

Of the 39 joint replacements included in this study, there were 7 cases (17.9%) of temporary facial nerve weakness post-operatively. All had resolved by 3 months, resulting in no cases of permanent weakness. Of these, 3 patients had isolated weakness of the temporal branch, I patient had isolated weakness of the zygomatic branch, and 3 patients had weakness of both the temporal and zygomatic branch. There were no patients with marginal mandibular or buccal branch weakness.

There were no cases of wound or peri-prosthetic infection.

The mean mouth-opening pre-operatively was 31mm compared to 35.3mm 2 weeks post-operatively, equating to a mean increase in mouth-opening of 4.3mm at the 2 week mark.

The mean lateral excursion post-operatively was 7mm on the ipsilateral side and 2.9mm on the contralateral side.

![](_page_0_Figure_18.jpeg)

Figure 2. Percentage of patients with temporary post-operative facial nerve weakness

# CONCLUSION

This approach utilises an endoscope and transbuccal trochar to allow TIR through an endaural incision, without the need for a submandibular incision. Other studies have documented a rate of temporary facial nerve weakness following TJR as around 45% (2, 3). This included a 22.3% isolated weakness of the temporal branch (2). Our study has demonstrated an incidence of facial nerve weakness of 17.9%, which is less than the overall facial nerve incidence reported elsewhere, but similar to the rate of isolated temporal branch. This is likely in part due to this technique essentially eliminating the risk of marginal mandibular branch injury which has been reported as 7% incidence. By placing the transbuccal trochar between the buccal and marginal mandibular branches, and placing the most inferior screw first, there is no stretch or traction downwards onto the marginal mandibular branch during placement of the ramus component of the prosthesis.

The infection rate for TJR appears low, with other studies finding 2.7% [2] and 4.5% [3]. This technique appears to be equal or decrease infection rates, with 0 post-operative infections in the 39 joints in this study. This may be explained by a reduced incision distance with the absence of the submandibular incision. Mouth opening increases over the year following TJR [2], and so the mean mouth opening increase of 4.3mm at 2 weeks would likely increase over the following.

This technique may prove challenging initially and increase operative time, however although not formally reported here, we estimate similar operative duration to the typical approach in our hands.

We conclude that this minimally invasive technique has similar post-operative outcomes in terms of infection, and temporary temporal branch weakness, and likely an overall decrease in facial nerve weakness.

### REFERENCES

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The authors have no conflicts of interest to declare