

Can a Novel Surgical Approach to the Temporomandibular Joint Improve Access and Reduce Complications?



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Purpose: This clinical study investigated whether the vascular-guided multilayer preauricular approach (VMPA) to the temporomandibular joint (TMJ) could improve access and decrease complications.

Patients and Methods: This retrospective evaluation consisted of a consecutive series of patients who underwent TMJ surgeries through the VMPA from January through December 2013. Patients with a history of TMJ surgery were excluded. Clinical data, including operating times, subjective complaints of incision scars, functional conditions of the auriculotemporal nerve and facial nerve, and other complications, were recorded and analyzed. All patients in this study were followed for at least 6 months.

Results: All patients (606 joints) had successful TMJ surgeries through the VMPA. All incisions healed favorably with an uneventful recovery. No patient developed permanent weakness of the facial nerve or other severe complications.

Conclusion: The VMPA can provide direct access and favorable visibility to the TMJ region and yield good esthetic and functional results. The VMPA can be considered the approach of choice for common TMJ surgeries.

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A surgical procedure to the temporomandibular joint (TMJ) can cause unfavorable complications because there are many important anatomic structures in the TMJ region, including the facial nerve, auriculotemporal nerve, superficial temporal artery and vein, middle temporal artery and vein, and the parotid gland. To avoid injury to these anatomic structures, various surgical approaches to the TMJ region have been described in the literature, such as preauricular, endaural, postauricular, retromandibular, submandibular, and intraoral approaches.¹⁻³ Among these, the preauricular approach is preferred by TMJ surgeons and used most often.^{4,5}

Two main preauricular dissection techniques have been described in the literature; one is the suprafascial

procedure proposed by Rowe and the other is the subfascial procedure proposed by Al-Kayat and Bramley.^{6,7} However, these procedures fail to provide a safe and efficient way to determine the exact position of the facial nerve, which could increase the risk of injury to the nerve.^{8,9} Furthermore, neither procedure provides direct access to the anterior or inferior aspect of the TMJ, because the bulky tissue flap containing the parotid gland, auriculotemporal nerve, and superficial temporal artery and vein is retracted to the anterior and inferior aspect of the TMJ.

In the past 15 years, the authors have been dedicated to enhancing the dissection technique of the preauricular approach to the TMJ to improve accessibility and decrease complications.^{5,10} A novel

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surgical approach to the TMJ was developed and named the vascular-guided multilayer preauricular approach (VMPA). The purpose of this study was to investigate whether the VMPA to the TMJ could improve access and decrease complications.

Patients and Methods

This retrospective evaluation consisted of a consecutive series of patients who underwent TMJ surgeries through the VMPA at the Department of Oral and Maxillofacial Surgery, Shanghai Ninth People's Hospital, Shanghai JiaoTong University School of Medicine (Shanghai, China) from January through December 2013. To be included in the study sample, the patient must have undergone TMJ surgery only through the VMPA and had no history of TMJ surgery. Those patients who underwent TMJ surgeries through a combination of the VMPA and another incision, such as the adjunct submandibular incision for total joint replacement with a prosthesis, or who had a history of TMJ surgery were excluded. All operations were performed by the same team of surgeons under the supervision of the same professor. All patients were instructed to return to the clinic at regular intervals (1, 3, and 6 months and 1, 2, 3, and 5 yr). All patients in this study were followed for at least 6 months. Clinical data, including operating times, subjective complaints of incision scars, functional conditions of the auriculotemporal nerve and facial nerve, and other complications, were recorded and analyzed by Excel 2013 (Microsoft, Redmond, WAS). The study was approved by the institutional review board.

SURGICAL PROCEDURES OF THE VMPA

[Video 1](#) of the VMPA is available online.

Skin and Subcutaneous Incision

The skin incision consists of a preauricular incision and its temporal extension in the hairline ([Fig 1](#)). The preauricular incision courses entirely along the curvature of the anterior border of the auricle; if necessary, the incision can be extended down to the level of the lobule for additional exposure. The temporal extension is brought obliquely forward in the hairline. The length and direction of the temporal extension depend on surgical demands. The temporal extension of approximately 3 cm long and at an angle of 135° to the preauricular incision is usually appropriate for most cases. As the first layer of the approach, the flap of the skin and subcutaneous tissue is reflected against the surface of the superficial musculoaponeurotic system (SMAS; [Fig 2](#)).



FIGURE 1. The skin incision is composed of a preauricular incision and its temporal extension in the hairline.

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SMAS Incision

The SMAS in this area consists of the superficial temporal fascia above the zygomatic arch and the preauricular fascia below. Once the SMAS is exposed, the neurovascular bundle consisting of the superficial temporal vessels and the auriculotemporal nerve between them can be readily identified within the superficial temporal fascia. The SMAS incision through the superficial temporal fascia is made in front of and close to the neurovascular bundle, and blunt dissection is used to expose the underlying white shining temporalis fascia ([Fig 3](#)). When the SMAS incision reaches the level of the zygomatic arch, where the neurovascular bundle turns deep to enter the parotid, the SMAS incision should be continued vertically through the preauricular fascia to expose the underlying parotidomasseteric fascia.

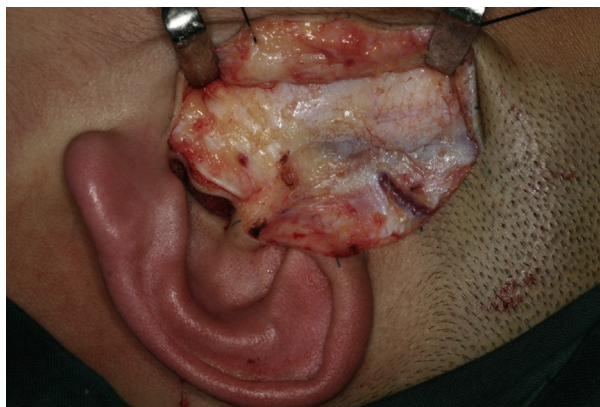


FIGURE 2. The flap of the skin and subcutaneous tissue is reflected against the surface of the superficial musculoaponeurotic system.

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