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Historical evolution of surgical approaches to the face—part II: midface

Jose S. Sifuentes-Cervantes¹ · Francisco Carrillo-Morales¹ · Jaime Castro-Núñez^{1,2} · Bhargav Venkata Chivukula¹ · Larry L. Cunningham³ · Joseph E. Van Sickels⁴

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Abstract

Surgical approaches to the head and maxillofacial area have been described and modified by multiple authors throughout history. It was during nineteenth and twentieth century when most of the techniques evolved due to advances in anesthesia and antibiotic therapy. Currently, a myriad of surgical approaches are employed to gain access to the maxillofacial complex, with each of them having advantages and disadvantages. Although the approaches are presented in numerous textbooks and articles, few texts describe the circumstances or historical context under which they were developed. In a series of three articles, we will provide a historical perspective of the evolution of the most common surgical approaches to the head and face employed today. Descriptions contain advantages and disadvantages of the approaches and modifications are also provided. The purpose of the present article (2/3) is to review the approaches to the midface.

Keywords Oral and maxillofacial surgery · Maxillofacial trauma · Oral pathology · History

Introduction

Techniques used to approach the midface have been described since ancient times and have evolved gradually.¹ Currently, there are numerous approaches to the midface that are used routinely. In the first article of these series, we described the approaches employed to access the upper face. In this article, the authors will provide a historical perspective of the evolution of the most common surgical approaches to the midface. The authors have endeavored to include the most widely used techniques. Nevertheless, it is possible that some references/approaches are missing.

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Materials and methods

An electronic search of the English, German, French, and Spanish literature was conducted. Searched databases included: MEDLINE via PUBMED, EMBASE via OVID, LILACS, and SCIELO via BIREME. Secondary searching (PEARLing) was undertaken, whereby reference lists of the selected articles were reviewed for additional references not identified in the primary search. Additionally, table of contents of the following journals were reviewed: *Mund-, Kiefer- und Gesichtschirurgie* (Oral and Maxillofacial Surgery), *Journal of Oral and Maxillofacial Surgery*, *Oral Surgery Oral Medicine Oral Pathology Oral Radiology*, *British Journal of Oral and Maxillofacial Surgery*, and *International Journal of Oral and Maxillofacial Surgery*. Medical Subject Heading (MeSH) and the Spanish version of MeSH, *Descriptores en Ciencias de la Salud* (DeCS), were used for the search. Due to the nature and complexity of the paper, it is possible that some references may have escaped the searches.

Results

The approaches commonly used to access the midface are depicted in Figs. 1, 2, and 3 and summarized in Table 1.

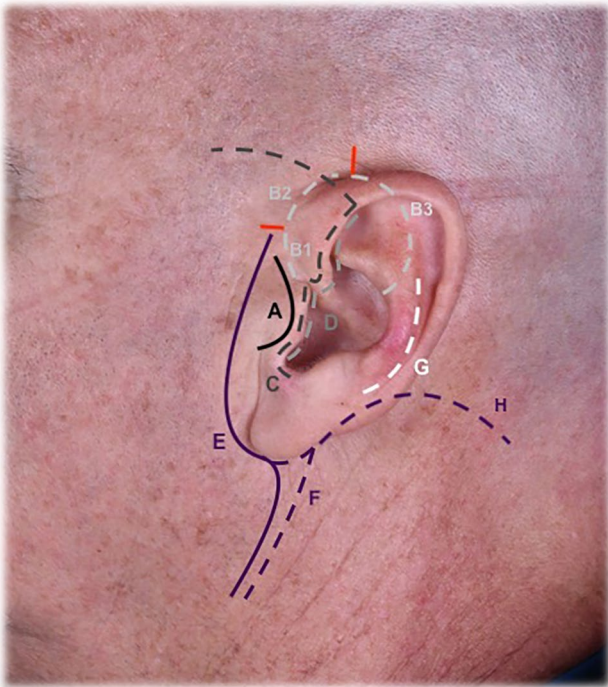


Fig. 1 Auricular/TMJ area approaches

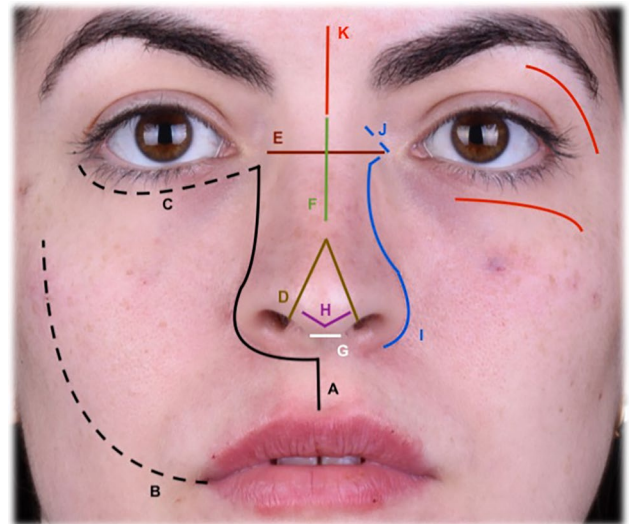


Fig. 3 Midface approaches

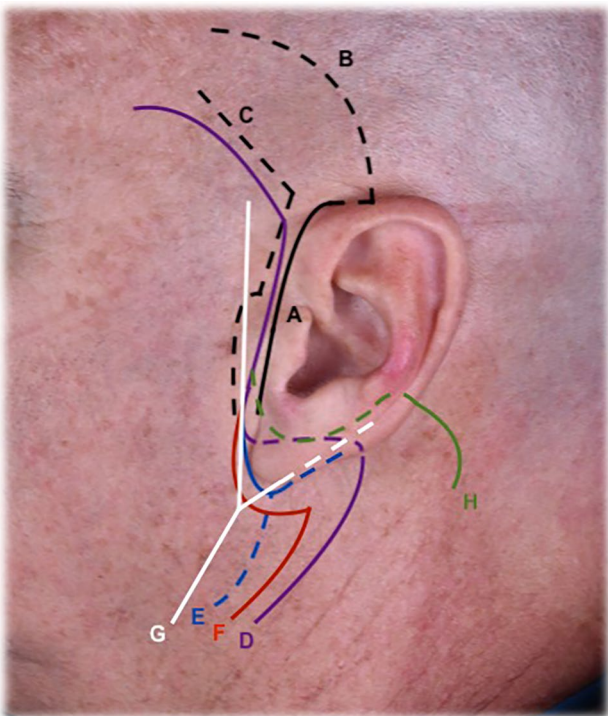


Fig. 2 Auricular/TMJ area approaches

Table 1 Chronological overview of surgical approaches to the midface

Approach	Year
Weber	1845
Ferguson	1845
Dieffenbach	1848
Dieffenbach (Rhinoplasty)	1848
Endaural (Kessel)	1885
Trendelenburg (Rhinoplasty Mod.)	1886
Inverted V (Weir)	1892
Lateral rhinotomy (Moure)	1902
Gutierrez	1903
S Incision (Blair)	1920
Adson/Ott (Gutiérrez Mod.)	1923
Heermann (Endaural Mod.)	1930
Retroauricular (Axhausen)	1931
Lexer (Rhinoplasty Mod.)	1934
Rethi (Rhinoplasty Mod.)	1934
Bailey (Blair Mod.)	1941
Redon (Gutiérrez Mod.)	1955
Sercer (Rhinoplasty Mod.)	1956
Samengo (Gutiérrez Mod.)	1961
Tessier	1967
Appiani (Gutiérrez Mod.)	1967
Rowe (Preauricular Mod.)	1972
Al-Kayat/Bramley (Preauricular Mod.)	1979
Facelift (Hagan)	1980
Popowich/Crane (Preauricular Mod.)	1982
Starck (Endaural Mod.)	1993
Guerrero (Endaural Mod.)	2001
Thankappan (Lat. Rhinotomy Mod.)	2009

Temporomandibular joint, ears, and parotid areas

Tumors, trauma, and esthetics are the most common reasons to work in the temporomandibular joint (TMJ) and surrounding areas. From our literature review, it was the German surgeon Johann Kessel who first proposed a surgical access for the ears in a paper entitled *Über die Otorrhoe und ihre Behandlung* (About Otorrhea and its Treatment).

Many approaches have been described to access the parotid gland. In 1823, Maille Bernard reported the first parotidectomy case. In 1892, M. Codreanu described the first parotidectomy with preservation of the facial nerve. In 1903, Avelino Gutiérrez, a Spanish surgeon working in Argentina, introduced the first guidelines for getting access to the parotid gland. Vilray Papin Blair's approach was introduced in 1920 and was modified by Hamilton Bailey in 1941. Bailey's approach is the one that survived the test of time.

Endaural/auricular

Other names	Perimeatal (Fig. 1A)
Described by	Johann Kessel
Year	1885
Reference	Kessel J. <i>Über die Otorrhoe und ihre Behandlung</i> . Osterr Arztl Vereinszeitung, 1885. Reprint: Arch Ohrenheilkd 22:296, 1885
Description	The endaural approach is attributed to the otologic surgeon Johannes Kessel. Historically, several otologic approaches have been developed throughout history; many of them are used for inner ear surgery. We have limited our presentation to those approaches that are more pertinent from a maxillofacial surgery point of view The endaural approach consists in a vertical incision starting at the most anterior portion of the helix, proceeding downward following the tragus and finishing just before reaching the earlobe

Other names	Perimeatal (Fig. 1A)
Modifications	Antero-superior extra cartilaginous endaural incision (Fig. 1B1,B2,B3) Hans Heerman stated that the annulus of cartilage of the external auditory canal is interrupted by connective tissue between the sulcus auris anterior and the tragus. Therefore, an antero-superior incision in this area as an extension of the external auditory canal is possible without damage to the cartilage. This results in a wide exposure while reducing the possible outcome of perichondritis. He described an incision with 2 modifications depending on the exposure needed. The incision starts at 12 o'clock position of the meatus and continuing laterally toward the incisure, thus, avoiding cutting through cartilage of helix or tragus. After leaving the meatus, it followed the anterior edge of the helix upward about 1.5 cm. If more exposure was needed, the incision could be extended 1.5 cm longer. The final modification continued the incision in a curve around the superior attachment of the auricle posteriorly and toward the tip of the mastoid process (Heermann, H. Zur Frage der Plastik bei Gehorgangsradi- koperationen, Z Hals U.S.W Heilk 26:35, 1930) Modified endaural approach (Fig. 1C) The approach was designed by William J Starck, Guy A Catone, and Steven Kaltman. It had the advantage of having a good blood supply, excellent exposure, and no disturbance of perichondrium. It is made in an area with little vascularity and performed a good distance away from the facial nerve branches. The hair is shaven before a 4-cm incision is made in the temporal area. It is oriented at a 45 angle until it reaches the most antero-superior portion of the auriculo-cephalic sulcus. The incision continues over the helix to end in the scaphoid fossa when it is carried inferiorly, approximately 2 mm inside the rim of the helix. It is parallel to the contour of the helix until meets the superior slope of the crus at its midpoint. At this point, a 90-angle downward turn is made bisecting the crus, and a second 90-angle turn is then made in an anterior direction along the inferior slope of the crus heading toward the anterior incisure. Finally, just before the incisure, a downward turn is made along the undersurface of the tragus to end slightly before the intertragic incisure ensuring that tragal cartilage is not transected (Starck WJ, Catone GA, Kaltman SI. A modified endaural approach to the temporomandibular joint. J Oral Maxillofac Surg 51(1), 33–37, 1993) In 1993, Rasse and colleagues published in the Acta Chirurgica Austriaca a modification of the access to the TMJ and mandibular ramus (Rasse M, Fialka V, Paternostro T. Modifikationen des Zugangs zum Kiefergelenk und Ramus mandibulae. Acta Chir Austriaca 25: 49–55, 1993) Modified endaural approach (Fig. 1D) In 2001, Jaime Guerrero and Carlos Ruiz from Colombia developed a new endaural approach. It provided excellent exposure while protecting the temporal branch of the facial nerve and good cosmetic results. The incision starts at the inner (posterior-superior) border of the rim of the helix in relation to the scaphoid fossa; then, it is taken inferiorly until it reaches the superior slope of the crus. A 90-angle downward line is drawn across it, and a second 90-angle line is made in an anterior direction following the inferior slope of the crus toward the anterior incisure. Before reaching the anterior incisure, a final downward line is made along and beneath the crest of the tragus, ending at the incisure terminals inferiorly (Ruiz CA, Guerrero JS. A new modified endaural approach for access to the temporomandibular joint. Br J Oral Maxillofac Surg 39:371–373, 2001)

Gutiérrez approach	
Other names	None
Described by	Avelino Gutiérrez (Fig. 2D)
Year	1903
Reference	Gutiérrez A. Tumores de la glándula parótida. Su extirpación. <i>Rev Cirugía</i> . 1923; 118: 276–80
Description	Gutiérrez developed this approach to gain access to the parotid gland to be able to remove tumors. This incision has been modified by many surgeons, and it has been adopted for other procedures such as the facelift. It consists in a preauricular incision line which is continued by a line that runs toward the retro-auricular and mastoidal region and descends toward the neck behind the jaw
Modifications	<p>Modified Adson and Ott (Fig. 2E) Alfred Adson and William Ott proposed an incision starting anterior to the tragus and behind the parotid gland. The incision intersects another curved incision that starts below the earlobe and extends to the angle of the mandible. This approach provides excellent access (Adson AW, Ott WO. Preservation of the facial nerve in the radical excision of the parotid tumors. <i>Arch Surg</i> 6:739, 1923)</p> <p>Modified Redon (Fig. 2F) The approach designed by Henri Redon is very similar to the Adson incision. The main difference is that the posterior incision extension does not go beyond the earlobe. It is a more conservative approach (Redon H. <i>Chirurgie des glandes salivaires</i>. ed 1. Masson Ed, Paris, France; 1955)</p> <p>Modified Samengo (Fig. 2G) Luis A Samengo developed an approach which is very similar to previous described incisions. While his incision follows the same anatomic landmarks as the other approaches, it has straight lines. In this regard, it is unusual in that straight lines are usually avoided in surgical approaches due to the loss of adequate blood flow at the ends of flaps (Samengo LA. Consideraciones sobre la cirugía conservadora de la glándula parótida. <i>Pren Med Argent</i> 48:1586, 1961)</p> <p>Modified Appiani (Fig. 2H) Erdulfo Appiani developed an incision which he considered easier to perform and had better outcomes. The incision originates in the temporal region. It is 0.5 cm behind the anterior roots of the hair of the scalp, at the level of the end of the eyebrow. It runs downward at an oblique angle toward the back of the head in the direction of the preauricular groove. It courses along the groove until it reaches the earlobe. Following the earlobe outline, it continues along the posterior auricular groove until it covers two-thirds of its length. The incision then runs toward the scalp, falling obliquely down and backward toward the occipital region (Appiani E. Abordaje para la parotidectomía y transplante muscular. <i>Pren Med Argent</i> 54:1242, 1967)</p>

Blair incision	
Other names	Blair “S” incision (Fig. 1E)
Described by	Vilray Papin Blair
Year	1920
Reference	Blair VP. <i>Surgery of the Mouth and Jaws</i> , 3 rd ed. C.V. Mosby Company; 3rd edition, 1920, p 517
Description	Vilray Papin Blair first described this approach in 1920 with the primary intent of treating parotid gland disease. He described a preauricular incision that extended inferiorly until reaching the ear lobe where it coursed posteriorly about one centimeter and then downward again. The downward extension could reach the clavicle, if needed, depending on the case. He stated that post-operative healing was acceptable and that the scars were minimal
Modifications	<p>Modified Blair incision (MBI) (Fig. 1F) In 1941, Hamilton Bailey modified Blair’s approach. He stated that Blair’s technique was excellent; however, he explained that in some cases, it lacked exposure to the entire surgical field. He proposed that when the incision approached the ear lobe making its posterior extension, it should come as close as possible to the cartilage of the ear, and then continue downward as in the original approach. He reported that a better access was achieved (Bailey H. The tumors of the parotid gland with special reference to total parotidectomy. <i>Br J Surg</i> 28:337–346, 1941)</p> <p>Facelift approach (Fig. 1H) The advantages of a facelift approach were explained by Warren E. Hagan and Jack R. Anderson in 1980. They stated that there was no neck scar and no interruption of the subdermal capillary blood-flow from the skin flap. They concluded that there was less risk of fistulae (Hagan, W.E. and Anderson, J.R. (1980), “How I do it”—plastic surgery practical suggestions on facial plastic surgery rhytidectomy techniques utilized for benign parotid surgery. <i>The Laryngoscope</i>, 90: 711–715)</p>

Retroauricular	
Other names	Postauricular approach (Fig. 1G)
Described by	Georg Axhausen
Year	1931
Reference	Axhausen G. Die operative Freilegung des Kiefergelenkb 3:713, 1931
Description	The retroauricular incision was developed by Georg Axhausen in 1931. When compared to the standard preauricular incision, the retro-auricular method has the following advantages: better esthetics and maximum exposure of posterior and lateral joint structures with minimal distortion due to retraction. Also, there is less chance of injury to cranial nerves V and VII, and excellent hemostasis as larger preauricular vessels are retained in the flap decreasing bleeding from the bilaminar zone in the genu vasculosa
Modification	None

Preauricular	
Other names	None (Fig. 2A)
Described by	Fulton Risdon
Year	1934
Reference	Risdon F. Ankylosis of the temporomaxillary joint. JADA 21:1933–1937, 1934
Description	Fulton Risdon described this approach in 1934 to gain access to the TMJ and to replace an earlier horse-shoe incision which carried high risks to neurovascular structures. He explained that his approach could have two variations: the high and the low operation depending on the amount of exposure needed. The high incision was perpendicular to the mandible extending from the lower border of the external meatus of the ear, upward as high as the surgeon wished (3 cm usually). The lower approach was an incision made over the angle of the mandible

Other names	None (Fig. 2A)
Modifications	<p>Rowe's incision Norman Lester Rowe proposed an incision of three cm in the temporal fossa with the long axis inclined 45° to the zygomatic arch. The posterior limit was where the free margin of the helix is attached to the scalp. The incision then followed the groove between the anterior rim at the root of the helix and the facial skin anteriorly, passing downward, and posteriorly between the inferior limit of the helix and the upper border of the tragus. It was then continued along or slightly behind, the crest of this structure to the upper limit of the intertragal notch, where it inclines forward, turning down to follow the crease between the lobe and the face (Rowe, W. C. Surgery of Temporomandibular Joint, Proc. R. Soc. Med. 65: 383, 1972)</p> <p>Al-Kayat and Bramley approach (Fig. 2B) Adil Al-Kayat and Paul Bramley stated that their approach was similar to Rowe's incision, but it differed due to the incision being question mark shaped and being about a pinna's length away from the ear. Antero-superiorly, it was just within the hair line and curved backward and downward well posterior of the main branches of the temporal vessels until it meets the upper attachment of the ear. The incision then follows the attachment of the ear and just endaurally as described by Rowe. Greater access was achieved through this approach reaching over the scalp (Al-Kayat A, Bramley P. A modified preauricular approach to the temporomandibular joint and malar arch. Br J Oral Surg 17:91–103, 1979)</p> <p>Popowich and Crane incision (Fig. 2C) Larry Popowich and Reynold Crane introduced the latest modification of the preauricular approach. They stated that the advantages of their approach are a reduction of nerve palsy and provision of a donor site from the temporalis fascia. The fascia could be used to repair the meniscal or used to cover the condylar stump after a high condylar shave. Using this approach according to the authors decreased hemorrhage, improved visibility, and avoided auriculotemporal nerve anesthesia/paresis. Like the previous incision, a large question mark-shaped incision is made in the temporal area and then extended inferiorly in the preauricular area. From this point, it is modified with a vertical preauricular extension allowing more visibility (Popowich L, Crane, RM. Modified preauricular access to the temporomandibular apparatus. Oral Surg Oral Med Oral Pathol 54:257–262, 1982)</p>

The nose, maxilla and surrounding areas

Karl Otto Weber was born in Frankfurt, Germany, and received a degree of Doctor of Medicine and Surgery from Bonn University in 1851. In 1865, he became the head of the surgical department at Heidelberg University. He is attributed to be the first to describe the mid facial approach in his 1845 paper *Vorstellung einer Kranken mit Resection des Unterkiefers* (Presentation of a Patient with Resection of the Lower Jaw). The transfacial approach described by Weber was later modified by Sir William Ferguson, a Scottish surgeon who was a surgery professor in London's King's College Hospital.

Weber

Other names	None (Fig. 3A)
Described by	Karl Otto Weber
Year	1845
Reference	Weber O. <i>Vorstellung einer Kranken mit Resection des Unterkiefers</i> . Heidelberg Jahrbücher 22:80–82, 1845; Weber O. Presentation of a diseased resection of the lower jaw hindering the naturist. Med Association Heidelberg 4:80–82, 1845)
Description	Weber's incision extended from the midline upper lip to the midline of the nose. From there, it extends laterally to the ala of the nose and then upward to the medial canthus of the eye. This incision was developed in order to gain access to the maxilla and to remove tumors
Modifications	<p>Fergusson (Fig. 3B) William Fergusson published a similar approach in English. Therefore, a controversy exists as to who described the approach first. Fergusson proposed an incision starting in the upper lip toward the nostril extending from the ala, as high as within half an inch of the inner canthus of the eyelids. From there, the cheek could be laid open from the angle of the mouth as far as the zygomatic process of the malar bone. If necessary, an incision at right angles with this one could extend from the external angular process of the frontal bone, toward the neck of the lower jaw. He stated that he preferred not to do the second incision unless necessary for exposure. (Fergusson W. <i>System of Practical Surgery</i>. Philadelphia: Lea and Blanchard, 1845, p. 498)</p> <p>Dieffenbach (Fig. 3C) Johann Friedrich Dieffenbach modified the technique in 1848. His technique consisted in leaving the cheek alone to preserve branches of the "portio dura", employing only an incision through the upper lip and along the back or prominent part of the nose, up toward the inner canthus. From the canthus, he carried the incision horizontally along the lower eyelid to the upper and outer part of the malar bone. This modification was acknowledged in Fergusson's publication. Sadly, Dieffenbach did not include drawings in his original publication (Dieffenbach JF. <i>Die Operatie Chirurgie</i>. Leipzig: F.A. Brockhaus. 1848. p. 37)</p>

Other names	None (Fig. 3A)
Comments	The history of this approach is puzzling since three renowned surgeons published very similar approaches in very close dates. Careful studying of the original publications allowed the authors to conclude that even though these approaches were similar, they were essentially different. We will illustrate the original incisions made by these surgeons in their original publications

Rhinoplasty incisions

Other names	None
Described by	Johann Friedrich Dieffenbach
Year	1848
Reference	Johann Friedrich Dieffenbach (Dieffenbach JF. <i>Die Operatie Chirurgie</i> . Leipzig: F.A. Brockhaus. 1848. p. 37)
Description	The first reported reduction rhinoplasty was performed by Johann Friedrich Dieffenbach in 1848. He described the use of external incisions or wedge resections containing dorsal skin, cartilage, and soft tissue. He used a "cross shaped" incision to reduce both cartilage and skin

Other names None	
Modifications	<p>Inverted V shaped Incision (Fig. 3D) Robert Weir developed this approach in 1892 with the objective of restoring a saddle nose. He used an inverted V incision on the dorsum of the nose and tried to augment it with the breastbone of a young duck. He stated that his results were not successful. His incision nonetheless prevailed and then was popularized by the famous Jacques Joseph, an orthopedic surgeon from Berlin (Weir R.F. (1892) On restoring sunken noses without scarring the face (Classical Article). <i>Aesthetic. Plast. Surg</i> (1988) 12, 203-206)</p> <p>Horizontal Incision (Fig. 3E) This incision was developed by the German surgeon Friedrich Trendelenburg (1844–1924). It was used for a reduction rhinoplasty. Its advantages were that it allowed the surgeon to operate under aseptic conditions and with direct visual control (Trendelenburg, F., Eigenbrodt, K., and Heineke, H.: <i>Verletzungen und chirurgische Krankheiten des Gesichts. Dtsch. Chir.</i> 33, I and II, 1886)</p> <p>Vertical Incision (Fig. 3F) Erich Lexer introduced a median vertical skin incision along with a perichondrial and periosteal flap elevation for reduction of a nasal hump (Lexer, E.: <i>Die gesamte Wiederherstellungschirurgie, vol. 2. J. A. Barth, Leipzig, 1931, p. 548</i>)</p> <p>Transcolumellar approach “Rethi’s Incision” (Fig. 3G) In 1934, Aurel Rethi from Budapest proposed a high incision only through columellar skin. It was connected with bilateral endonasal skin incisions along the lateral aspects of the medial crura and perpendicular to the horizontal columellar incision. The incision continued through the skin of the under-surface of the lateral crura of the alar cartilages. After elevation of the superior skin flap, both alar cartilages and upper laterals were sharply divided through vestibular skin and septal mucoperichondrium. He advocated for this approach to expose the alar cartilages and nasal dorsum (Rethi A. C. (1934) Operation to shorten an excessively long nose. <i>Rev. Chir. Plast.</i> 2, 85)</p> <p>Gull wing approach (Fig. 3H) In 1956, Ante Sercer developed an approach which was performed at the tip of the nose with the design of a “Gull-wing”. He reported that this approach provided better access to the anterior nasal spine and the nasal tip. A horizontal mid-columellar incision was included and the alar cartilages were not incised. His approach was popularized by Ivo Padovan, his successor in Zagreb. Padovan modified the approach to a V shape incision located at the natural crease (Sercer A. and Mundnich K. (1962) <i>Plastische Operationen ander Nase, Gesicht und Ohrmuschel. Georg Thieme, Stuttgart</i>); (Padovan I. External approach to rhinoplasty (decortication). <i>Plastic and Reconstructive Surgery of the Face and Neck. Aesth. Surg.</i> 1, 143–146, Thieme Verlag, Stuttgart)</p>

Other names None	
Comments	<p>It is believed that the first surgeon to introduce endonasal subcutaneous rhinoplasty in America was John Orlando Roe (1845–1915) in 1887. He was an American otolaryngologist from Rochester, NY. A myriad of nasal approaches was developed since the late seventeenth century. We have chosen the most representative incisions that have served as the foundation for the more recent approaches Today, most of rhinoplasties are done through the closed approach (Zijlker T, Vuyk H, Adamson P. External incisions in rhinoplasty: a historical review. <i>Face</i> 1993; 2:75–86)</p>

Lateral rhinotomy

Other names	None (Fig. 3I)
Described by	Emile J. Moure
Year	1902
Reference	Moure ÉJ. Traitment des tumors malignes primitives de l’ethmoide. <i>Rev Laryngol Otol Rhinol (Bord)</i> 23:401–412, 1902
Description	<p>This incision lies halfway between the medial canthus and the nasal dorsum extending from the inner margin of the eyebrow down along the nasomaxillary groove curving around the ala to enter the nose. It provides excellent access and has a good potential for cosmetic outcomes since the incision is hidden behind the ala of the nose</p>
Modifications	<p><i>Thankappan modification</i> (Fig. 3J) In 2009 Krishnakumar Thankappan, Rajeev Sharan, Subramania Iyer, and Moni Abraham Kuriakose developed a new approach for the lateral rhinotomy. A vertical incision is made between the dorsal and lateral esthetic nasal subunits. It is extended along the lateral alar groove to the floor of the nose, and then if a lip split is required, it exits the nasal cavity. A triangular notch is left in the floor of the nasal cavity. A “V” is incorporated in the incision at the midpoint between the dorsum and the medial canthus. The objective of this approach is to achieve better outcomes esthetically by being more compatible with the musculature (Thankappan K, Sharan R, Iyer S, Kuriakose MA. Esthetic and anatomic basis of modified lateral rhinotomy approach. <i>J Oral Maxillofac Surg</i> 67:231–234, 2009)</p>

Other names	None (Fig. 3I)
Comments	Emile J. Moure of Bordeaux was the first professor of otolaryngology in a French University. In his 1902 paper, he published his external approach to the ethmoidal labyrinth, today known as lateral rhinotomy. The lateral rhinotomy was popularized by Moure; however, some believe that it was first done by Michaux in 1845 (Wong J, Heeneman H. Lateral rhinotomy for intranasal tumors: a review of 22 cases. <i>J Otolaryngol</i> 15:151–4, 1986)

Tessier approach

Other names	None (Fig. 3K)
Described by	Paul Tessier
Year	1967
Reference	Tessier P. Osteotomies totales de la face: Syndrome de Crouzon, syndrome d' Apert-oxcephalies, scaphocephalies, turriccephalies. <i>Ann Chir Plast</i> 12:273, 1967
Description	In 1967, Tessier developed a novel approach to treat craniofacial deformities. Three incisions were used: the first was a midline vertical incision starting over the glabella and finishing just below the midline point of the two medial canthi. The second incision resembles the <i>supero-lateral orbital rim incision</i> , but it extends to the midline of the globe. Finally, an inferior orbital rim incision that is parallel to the superior one is made; however, its is longer and extends almost to the medial canthus. The purpose of these incisions was to access the osteotomy sites needed for a craniofacial disjunction. Tessier reported good results in patients with Crouzon and Alpert syndromes. Likewise, he reported good results with patients presenting with oxycephaly, scaphocephaly, or turriccephaly. The midline and inferior orbital incision defects were very visible after healing; however, this was not considered major drawback considering the dramatic facial improvement of the patient after the surgery
Modifications	None

Conclusions

We have reviewed the history of the most commonly employed surgical approaches to the midface. Many of these original references were published in German, French, English, with some in Spanish and Italian.

Declarations

Ethical approval None.

Informed consent This article does not contain any studies with human participants or animals performed by any of the authors.

Conflict of interest The authors declare no competing interests.

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