

phlegmons. The anatomical variants B and D do not provide sufficient protection from the spreading of infection, making it necessary to perform cervicotomy a few hours after the occurrence of symptoms. There is no means of identifying the anatomical variant, either during surgery or before, via CT scan. Radiology only can define the area of the abscess. In this paper we want to show the effectiveness of the MIA and its results, thoroughly explaining how the technique works, from the teeth's extraction due to infection to the subsequent intraoral drainage of the submandibular lodge, all achieved with no need for cervicotomy.

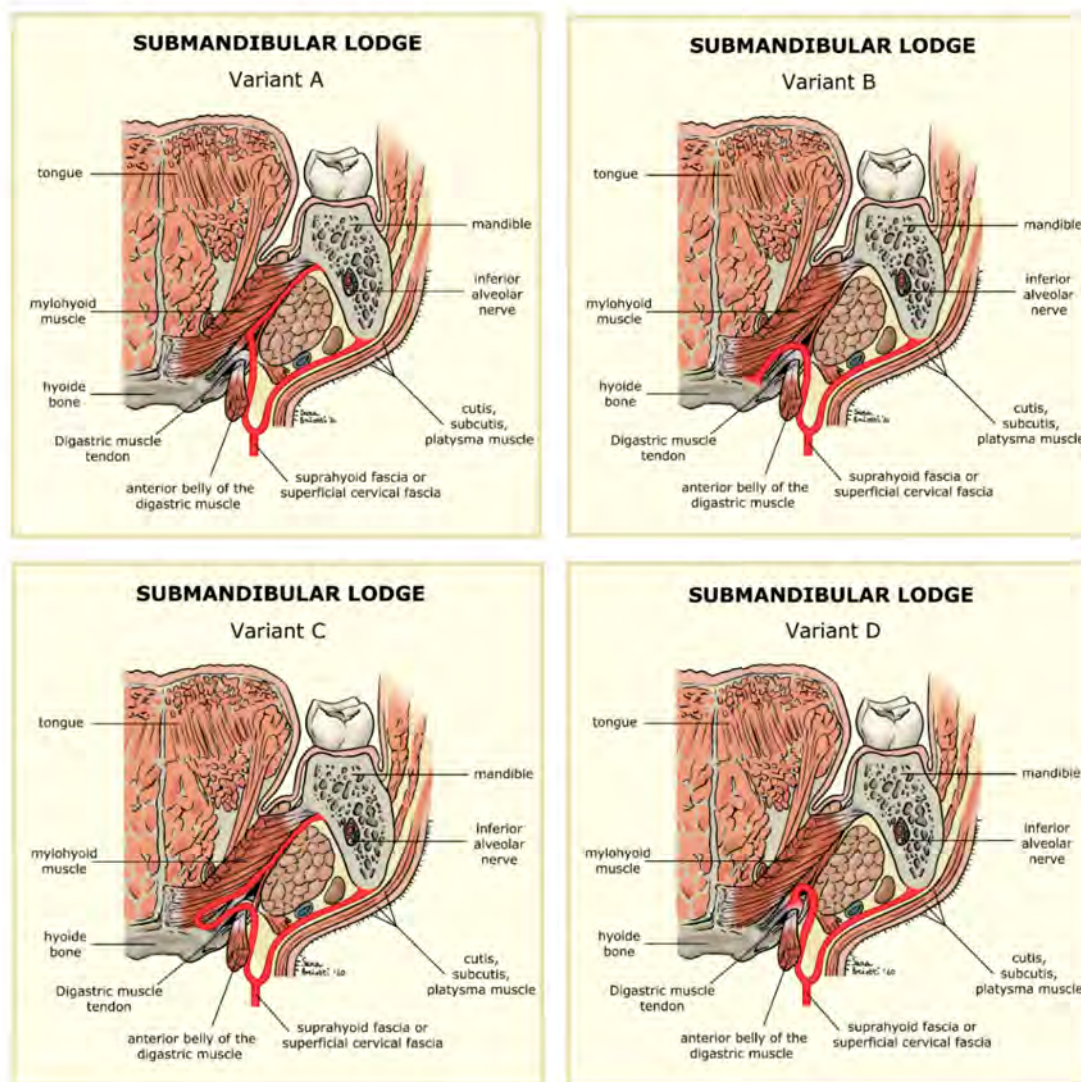


Figure 6. Anatomical variants of the Suprahyoid Fascia. (A) regular anatomy, (B) Charpy-Moresten anatomical variant, (C) Trolard-Decomps anatomical variant, (D) Truffert anatomical variant.

This kind of surgery is possible only when the abscess, through bone inflammation, has reached (but not crossed) the triangular space of the jaw containing the mylohyoid muscle shown in Figure 1.

The MIA can be executed when the abscess has reached—but not crossed—the inferior-medial side of the mandibula and/or the vertical plane, also due to bone inflammation spreading through the posterior side of the lesser horn of the hyoid bone. This last is a critical point, i.e. where the hyoglossus muscle ends and the perivisceral space begins. It is important to notice that if the abscess is not lateral to the mylohyoid muscle, this implies that the above-mentioned limits have already been crossed and therefore a cervicotomy is necessary. Head and neck CT or MRI both with and without contrast are an essential support before surgery, providing information regarding the area of the abscess.

This virtual space ensures that the infection does not overstep the anatomical limits towards the adjacent visceral tissues, which would then lead to the need for cervicotomy. Such limits are enclosed by the mylohyoid muscle—defining the external side of the sublingual region and the tongue base—by the inferior side of the jaw, and by the lesser horn of the hyoid bone. The latter corresponds to the posterior side of the submandibular lodge which is open at its rear to allow the passage of sublingual vessels (artery and vein), the lingual nerve, and the hypoglossal nerve [14,15].

Precisely, this rear opening is the most critical point—among the other anatomical structures mentioned earlier—since it is often too weak to contain the infection that will therefore easily spread under the effect of gravity. Obviously if the CT scan shows an infection that has crossed these limits, the MIIA would be an inadequate measure to prevent a further spreading of the infection and it would be necessary to proceed with a cervicotomy.

We have already described the anatomical variants of the submandibular lodge. When the infection fills the virtual spaces of the superficial and deep cervical fascia (B,D) it could potentially spread into the visceral region. On the contrary, when the case of an empty submandibular lodge occurs, if we operate in time we are able to drain the deep sides of the lodge, eluding the risk of the infection slipping through an intraoral pathway, which could potentially turn from an odontogenic abscess into a neck's phlegmon, for which a cervicotomy would be required [10].

5. Conclusions

The MIIA, in selected cases, can lower the impact of the surgery, consequently reducing the length of hospitalization and cutting health costs. When abscess occurs and does not cross the previously described anatomical limits, we suggest the use of this technique to obtain a shorter post-operative recovery.

Author Contributions: We count a total of ten persons in our medical team, which is made up of two separate surgical, dental and otolaryngologist teams who work jointly on cases of various diseases, such as abscesses, neck phlegmons derived from odontogenic infection, and so on. The team focusing on the ENT trait consists of M.D.V., M.F., A.G. and F.C., while the team that operates on the dental side consists of A.P., M.G., L.T., G.M., F.R.F. and B.C. On a more detailed level: conceptualization, M.G. and M.F.; methodology, M.G.; validation, M.D.V., A.G. and A.P.; formal analysis, L.T.; investigation, F.C.; resources, M.G.; data curation, B.C.; writing—original draft preparation, F.R.F.; writing—review and editing, G.M.; visualization, F.R.F.; supervision, M.F.; project administration, A.P. All authors have read and agreed to the published version of the manuscript.

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