



Figure 14. Partial prosthesis in resin with function of palatal plate.



Figure 15. After two months.

After two months, the complete closure of the fistula was observed (Figure 14).

3.1.4. Case 4: P.M.A.

A 70-year-old patient presented after surgical resection of a palatal carcinoma caused by lichen planus. The patient was taking beta-blocking medication. The patient was edentulous in the upper and lower jaw, requiring total prosthetic rehabilitation with the addition of resin to fill the fistula. (Figure 16) The patient's fistula could be classified as type III according to the Pittsburg classification and was placed in group 2, subgroup B, as the basal bone of the maxilla was involved.



Figure 16. Before NSPF.

The patient was treated with NSPF every two weeks, with a progressive reduction in the portion of the prosthesis that was introduced into the fistula. The fistula was initially surrounded by hypertrophic fibromucosae. After one month, there was a marked improvement in the quality of the tissue around the fistula, but the size was not reduced as expected. After two months, there was no change in size, with the exception of a reduction in the reported symptoms and an improvement in the mucosa around the fistula. (Figure 17).



Figure 17. After 2 months.

4. Discussion

The main objective of the study was to propose a minimally invasive technique to reduce the size of palatal fistulae and to reduce the surgical difficulty.

The significant reduction in size allowed us to simplify the surgical procedure to close the fistula. In some cases, the NSPF protocol led to *restitutio ad integrum* (15 patients), allowing the complete recovery of function.

It is possible that the bleeding induced cell proliferation and therefore a constant reduction in the distance between the walls of the fistula with healing modalities by secondary intention.

This possibly occurred because the patients were younger, meaning that cell replication took place more rapidly and efficiently.

The presence of at least one dental element ensured the greater stability of the prosthesis, with the advantage of less trauma in the fistula region during stomatognathic functions.

Similarly, the presence of maxillary bone was also a favorable element for tissue healing.

On the other hand, the involvement of the maxillary bone by the primary tumor and total edentulism were found to be unfavorable factors. In such cases, in fact, an increase in the mobility of the prosthesis was recorded during periodic checks, causing constant trauma to the fistula and a reduced tissue response.

In addition, the presence of keratinized tissue in the lesion, by virtue of its increased consistency, ensured, in the cases concerned [10], better resistance to trauma and cell proliferation, after the bleeding and the obliteration of the fistula with the prosthesis.

In fact, another favorable factor for healing is the reduction of bacterial colonization. In this sense, not only was the prosthesis–mucosa seal decisive, being periodically re-evaluated at each check-up, but also the patient's compliance was ensured in terms of the correct at-home hygiene practices. Although we observed a high rate of complete closure of the treated fistulae (75%), it must be considered that the majority of the treated patients had type III and IV fistulae (Table 3). Type III and IV fistulae, according to the Pittsburg classification, do not have muscle-type mobility. Moreover, the stabilization of the palatal protection is easier to obtain.

5. Conclusions

In conclusion, we cannot prove the particular effectiveness of the NSPF protocol, as a more evidence-based research methodology and more control studies are required. We can hypothesize the significant importance of non-surgical techniques. The conditions that increase the likelihood of closing the fistulae, according to what has been clinically observed, are as follows.

1. Age: Regenerative capacity at a young age is likely to be greater.
2. The presence of dental elements: A greater reduction in size and a higher rate of closure was observed in partially edentulous patients than in totally edentulous patients. Dental stabilization of the palatal plate probably reduces any micro-movements that prevent the apposition of tissue.

3. Presence of basal maxillary bone: The presence of basal bone seems to improve the quantity and quality of the maturation tissue, probably acting as a support for the newly formed tissue.
4. The presence of keratinized mucosa: The resistance to trauma of the keratinized epithelium of the mucosa improves the stability over time of the result obtained from the reduction in the diameter of the fistula. The palatal fibromucosa is extremely resistant to trauma compared to the alveolar mucosa [19].

A multicenter study would allow us to achieve a statistically valid sample number and greater diversification regarding the typology of fistulae according to the Pittsburgh classification. Further evaluation will be needed to understand the true potential of this technique. It appears to be valid for the purpose of reducing large fistulae and reducing surgical invasiveness. It will certainly be necessary to observe patients to understand the stability of the result obtained over time, so as to define guidelines and protocols with predictable prognoses.

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