

Immediate Nipple Areolar Complex Reconstruction in A Patient With von Recklinghausen's Neurofibromatosis: A Clinical Case Report

Iyadh Ghorbel¹, Ghada Ben Othmane¹, Amine Gargouri^{1*}, Khelil Ennouri¹

¹University of Sfax, TUNISIA

***Corresponding Author:** Amine Gargouri, University of Sfax, TUNISIA

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Abstract

Von Recklinghausen's neurofibromatosis is an autosomal dominant condition commonly characterized by café au lait patches, axillary freckling, multiple neurofibromas, and Lisch nodules. In this context, we present a complex case involving a 32-year-old female who suffered from severe neurofibromatosis, leading to a significant impact on her bilateral nipple-areolar complexes. Furthermore, we illuminate the subsequent outcome of her immediate reconstruction procedure.

Keywords: breast, neurofibromatosis, nipple, plastic surgery

Introduction

Neurofibromatosis type 1 (NF1) is an autosomal dominant disorder, with an estimated incidence ranging from 1 in 2,500 to 1 in 3,000 [1], of which 50% of cases are sporadic [2]. Individuals with NF1 exhibit diverse manifestations, including café au lait spots, neurofibromas, intertriginous freckling, Lisch nodules, and bony dysplasia in long bones, all stemming from the deficiency of neurofibromin protein.

Neurofibromas in the breast are uncommon [3–5], particularly those affecting the nipple-areolar complex. This paper aims to present a case of a female patient with neurofibromas involving the nipple-areolar complex, while also discussing the surgical approach and the optimal timing for reconstruction.

Clinical Case

A 32-year-old woman diagnosed with NF1 based on the National Institutes of Health criteria [6] was referred to our department due to the significant and deforming neurofibromatosis affecting both bilateral nipple-areolar complexes (fig1). Notably, there was no family history of NF1.



Fig 1: Neurofibromatosis involving bilateral nipple-areolar complex

Upon examination, numerous cutaneous neurofibromas were evident across her chest and breasts, with particularly pronounced serpiginous, pedunculated neurofibromas on both sides. These lesions caused pain and protruded outward by 3 cm to 5 cm from the nipple and areola, resulting in deformity of both nipples. Over a span of two years, these neurofibromas had progressively increased in size.

The patient was significantly distressed by the disfigurement caused by these neurofibromas and actively sought their removal. Mammography

revealed well-defined, dense, pedunculated nodules originating from the areolar region.

In light of the clinical presentation, the decision was made to proceed with localized excision of the neurofibromas, coupled with minor plastic surgery interventions to restore symmetry to the areolar region. The nipples were reshaped using a CV flap technique, and the areola was reconstructed with a total skin graft (Fig2).



Fig 2: Post local excision of neurofibromas + Reconstruction of nipple areolar complex

Post-operatively, the patient experienced no complications and expressed satisfaction with the final aesthetic outcome.

The histopathological examination verified the neural differentiation of spindle cells and the presence of Meissner corpuscles, demonstrating immunopositivity for S100. However, proliferation was observed to be negative for epithelial membrane antigen (EMA).

Discussion

Neurofibromas occurring in the breast are exceedingly uncommon [3,4]. Only a limited number of reported cases have discussed treatment approaches, especially when these neurofibromas involve the nipple-areolar complex [5]. A study conducted by Freidrich et al uncovered that tumor emerging in the areola and nipple region of NF1 patients, which resembled accessory nipples, were all identified as neurofibromas. This phenomenon was observed in both males and females, with occasional occurrences in children, showing a greater inclination for females to develop cutaneous neurofibromas in this particular location [3].

In general, neurofibromas tend to be asymptomatic; surgical intervention may be considered for cosmetic reasons when tumors reach a substantial size [7]. When these neurofibromas grow significantly and

become unwieldy, they are characterized using terms such as "elephantiasis neuromatosa" or "fibroma pendulum" [4].

Therapeutic options include surgical excision for managing painful and disfiguring lesions, as well as treatment using CO2 laser [8]. Previous reviews have showcased instances where surgical intervention was limited to localized removal of neurofibromas from the nipple area, involving procedures like nipple and areola reduction [3,4,9].

To our knowledge, this case report stands as the first documentation of immediate nipple reconstruction using a CV flap following the excision of neurofibromatous lesions affecting the nipple-areolar complex.

We performed a thorough excision of both nipple-areolar complexes, managing the resultant skin defect by utilizing purse-string sutures. Simultaneously, within the same surgical session, we employed a CV technique to create the nipple and implemented a skin graft to reconstruct and restore the integrity of the areolar region. Our patient reported a high level of satisfaction following the surgery.

In cases similar cases, complete excision of neurofibromas coupled with reconstruction not only ensures favorable aesthetic outcomes [10] but also serves as a safeguard against potential sarcomatous transformation [11].

It's important to acknowledge that NF1 patients face an elevated risk of developing various benign and malignant neoplasms, including breast cancer [12–14].

There has been conjecture surrounding the possible effect of numerous neurofibromas within the breast and the nipple-areolar complex, which might inadvertently obscure the detection of a breast mass during palpation, potentially leading to delayed clinical recognition [15–17]. In cases where a breast lesion is suspected in patients with NF1, it is recommended to undergo radiological imaging to gather additional diagnostic insights [7,18].

The breast holds significant importance within the framework of female identity. We firmly assert that preserving the nipple-areolar complex (NAC) is of utmost importance in the process of restoring a patient's body image [10,19].

Moreover, individuals with NF1, including our patient, frequently encounter discrimination or rejection from society, and even within their own families. This can be attributed to the distressing appearance associated with NF1, as well as the potential

presence of learning and behavioral disabilities that often accompany the condition [2,17]. In such cases, plastic surgery not only addresses the physical aspects but also offers a chance for these individuals to regain a sense of normalcy and social acceptance.

Conclusion

Our case of bilateral neurofibroma excision, which included the nipple-areolar complex, followed by immediate reconstruction in a female diagnosed with NF1, remains an unusual occurrence in clinical practice.

The significance of plastic surgery in the treatment of breast neurofibromas among NF1 patients cannot be overstated, as it plays a crucial role in preserving function and psychological equilibrium.

We advocate for an early and meticulous physical assessment, alongside the utilization of various imaging techniques for screening purposes, whenever any potentially concerning clinical indicators manifest in patients with NF1.

Author contributions

All authors contributed significantly and were in agreement with the content of the manuscript. All authors participated in data collection and in writing the manuscript.

Conflicts of Interest

No author has any financial or personal relations-hip with any person or organization that could inappropriately influence their work.

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