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CASE REPORT

Giant congenital melanocytic nevus - Reconstruction using multiple modalities: A case report

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Abstract: Congenital melanocytic naevi are neuroectodermal lesions that are mainly composed of melanocytes. They are present in 1% to 6% of all newborns. These lesions carry the risk of transforming into melanomas; however, the psychological effect of such disfiguring naevi is potentially of greater concern to both the child and parent. Several classifications for congenital melanocytic naevi have been proposed, the most common of which is the sub-classification according to their size as this affects the choice of treatment. Many treatment modalities have been utilized including surgical excision followed by reconstruction, curettage, dermabrasion, laser therapy and chemical peels. In this report, we present a case of an otherwise healthy eight-year-old girl with a giant congenital melanocytic naevus on the central face. The lesion was mostly excised with remaining satellite lesions dermabraded. The defect was then reconstructed with a full thickness skin graft harvested from the expanded supraclavicular skin, in addition to the ReCell (non-cultured epithelial autograft) technique. Within six months post-operation, excellent skin pigmentation and texture was achieved.

Keywords: congenital facial naevi; ReCell; dermabrasion; tissue expander; melanoma

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Introduction

Congenital melanocytic naevi (CMN) are neuro-ectodermal lesions that are evident at birth. These lesions develop between the 5th and 25th weeks of gestation. They are present in 1% to 6% of all newborns with an incidence of 1:20,000[1,2].

Several classifications of congenital melanocytic naevi have been proposed in literature; the most common of which is the sub-classification according to their anticipated surface diameter in adulthood: small lesions are those less than 1.5 cm in diameter, medium lesions are 1.5 cm to 20 cm in diameter, and large lesions are more than 20 cm in diameter[3]. This has been modified to define large lesions as those that are 11 cm to 20 cm in diameter, and naevi larger than 20 cm are considered as giant lesions[4].

As there is a risk of malignant degeneration associated with large and giant CMN (reported to reach up to 12 percent)[5,6], it is common practice to completely excise such lesions. It is also thought that surgical excision may reduce the risk of malignant degeneration. However, this remains a topic of controversy throughout literature. There is no doubt that surgical excision must be taken into consideration, as such a disfigurement can be detrimental to a child's psychological development[3,7-10].

When considering surgical excision, the size and site of the naevus is of tremendous importance in determining the plan of management[9,11]. This is a much complex task when an aesthetically important area such as the

face is affected[9]. One must respect the aesthetic subunits and that may entail the need for serial excision and hence multiple procedures.

Case presentation

The patient is an eight-year-old girl who is otherwise healthy with an uncomplicated perinatal history. She presented with a giant congenital melanocytic hairy naevus of the nose measuring 15 × 5 cm, increasing in size since birth. Photography consent was taken from the parents (**Figure 1**).

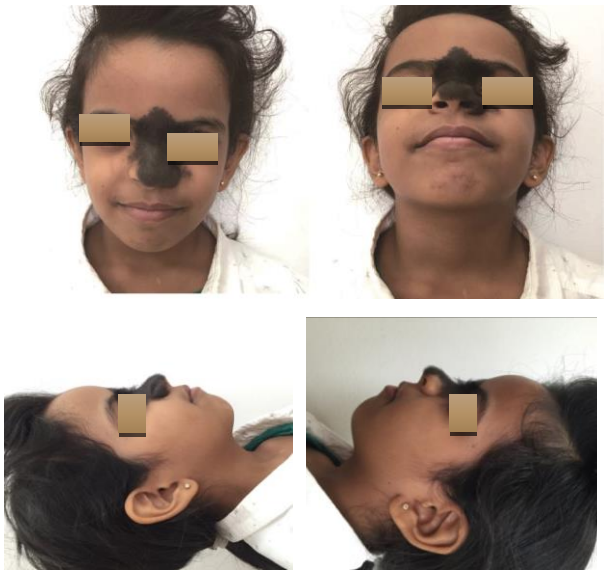

Figure 1. Pre-operative extent of CMN

After multiple counseling sessions with the parents and child, the decision to proceed with surgery was reached. The patient was admitted to our institute; consent was obtained from the parents and pre-operative work-up was done. In the operating theatre, a 5-cm incision was made over the right supraclavicular groove after an injection of 1% Xylocaine with 1:100,000 epinephrine. Meticulous dissection was done and a 75-cc tissue expander was inserted into the pocket. After that, methylene blue was injected with an initial 30-cc of normal saline. A small drain was placed, and removed the following day.

The patient visited the outpatient clinic on a regular basis and the tissue expander was over-expanded to 100 cc. This was attained over a period of six weeks.

She was then brought back to our institute for total excision and second stage reconstruction. Consent and pre-operative work-up were obtained in a similar manner. She underwent general anesthesia, and after the infiltration of 40 cc of 1% Xylocaine with 0.25% Marcaine, the lesion was excised in full thickness (**Figure 2**).

The majority of the defect was covered by a full thickness skin graft harvested from the expanded supraclavicular skin. In addition to excision, dermabrasion of the remaining naevus covered area over the nasolabial folds bilaterally, medial end of the right eyebrow and right lower lateral cartilage was performed (**Figure 3**).

Part of the obtained graft was used in ReCell technique and administered in the coverage of the dermabraded areas. The full thickness graft was then fixed with 4.0 vicryl rapide and bolstered in place, followed by Tegaderm; the ReCell graft was fixed with cellophane, followed by steri-strips (**Figure 4**).

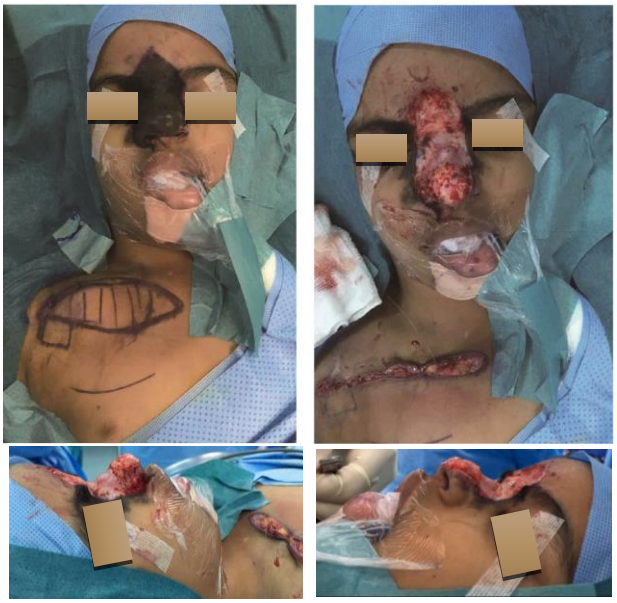

Figure 2. Full thickness excision of CMN centrally located

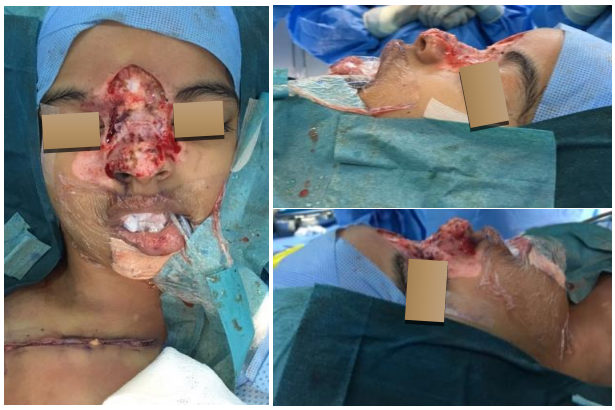

Figure 3. Dermabrasion over the nasolabial folds bilaterally, medial end of the right eyebrow and right lower lateral cartilage

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Postoperatively, the grafted area was hyperpigmented; however, there was a drastic and gradual improvement over a period of four weeks in skin pigmentation and texture.

Histopathology report revealed compound nevocellular naevus with junctional activity and nests of cells in the upper dermis with maturation in the deep dermis.

At six-month follow-up, a significant improvement was noted in comparison to her pre-operative presentation (**Figure 5**).

Figure 4. Application of full thickness skin graft

Figure 5. 6 months post-operative

Discussion

Treatment of giant congenital melanocytic naevi is a challenging commitment. Several modalities have been utilized in their management. The methods of choice include complete excision followed by reconstruction (skin graft, tissue expansion, local flaps), and incomplete excision (chemical peels, laser therapy, dermabrasion and curettage)[12]. In addition, cultured epithelial autograft (CEA) has also been employed in the treatment[13].

The use of tissue expansion has been incorporated in the management of large congenital melanocytic naevi with the use of local advancement and rotation flaps or as a full thickness skin graft.

Gur and Zuker used tissue expansion in the management of facial CMN that are more than 3 cm in diameter. Their extensive use proved successful with good aesthetic results in conjunction with serial excisions and skin grafting. Scars were planned to lie transversely or obliquely in a single aesthetic unit and thus be less visible[11].

Dermabrasion was discovered by Johnson in 1977. He dermabraded the entire naevus of three patients whose wounds went on to re-epithelialize without pigmentation[14]. It proved to be an adequate modality for the removal of pigmentation in the treatment of large and giant CMN.

In 2005, ReCell (non-cultured epidermal/dermal autograft) was introduced primarily for the treatment of partial thickness burns. Its reconstructive applications have been employed following ablative skin cancer surgery with satisfactory aesthetic results. The use of ReCell is easy and straightforward. Initially a specimen of split thickness skin is harvested. Then, it is administered in trypsin for a duration of 20 minutes. Meanwhile, the dermabrasion is done and haemostasis is ensured. The specimen is then removed and the cells are taken from the dermoepidermal junction zone using a blade. Suspension of the cells in sodium lactate solution is performed followed by aspiration, filtration, and finally application onto the wound[12]. However, cell suspension is not without disadvantages. The body contour makes it difficult for the whole concentration of cells to remain in contact with the wound; thus, early dressing change is not advised in order to allow the cell suspension to stay in close proximity with wound. ReCell is superior to CEA in that it allows for completion of the surgery in a single procedure with a minimal donor site.

Despite careful excision or dermabrasion of a giant CMN, the risk of malignant transformation cannot be ruled out. Thus, regular long-term follow-up is

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recommended.

Conclusion

Treating complex congenital melanocytic naevi is challenging and requires a combination of treatment modalities. Tissue expansion in conjunction with full thickness skin graft, dermabrasion and ReCell technique allows for complete excision of a single aesthetic unit and reconstruction in a two-stage, easy, safe and short procedure.

This technique allows for the removal of the melanocytic pigment load, and promotes rapid epithelialization with good pigmentation. It also reduces the risk of malignant degeneration, improves aesthetic appearance and potentially reduces psychological stress.

Author contributions

Acquisition of data was done by MM AlKahtani, L Asad and A Sindi. MM AlKahtani was also involved in study conception and design, analysis and interpretation of data, drafting, and critical revision of the manuscript.

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Conflict of interest

The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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