A Quasi-Experimental Study of Cosmetic Outcomes on Shave Excision for the Treatment of Acquired Melanocytic Nevi: A Pakistani Tertiary Care Hospital Experience

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Significance:

Acquired melanocytic nevi refers to an organized collection of melanocytes, neural crest in origin that usually appear after the first year of life. Scientific literature suggests that genetic predisposition, cumulative sun exposure, and history of sunburn are risk factors for acquired melanocytic nevi. This study aimed to assess the cosmetic outcomes of shave excision for the treatment of acquired melanocytic nevi in a Pakistani tertiary care setting.

ABSTRACT

Background: Acquired melanocytic nevi refers to an organized collection of melanocytes, neural crest in origin that usually appear after the first year of life. This is a benign condition of the skin and is commonly seen in about 80-100% of the general population. Epidemiologic data indicate that the number of nevi peak during the second and third decade of life and the incidence decreases with age. For the treatment of benign melanocytic nevi, various surgical and non-surgical treatment modalities have been reported in scientific literature. This study aimed to assess the cosmetic outcomes of shave excision for the treatment of acquired melanocytic nevi in a Pakistani tertiary care setting.

Material and Methods: In total, 120 patients were enrolled in this study. All patients underwent shave excision upon being administered with intra-lesional local anesthesia (2% lignocaine with adrenaline). The lesion was shaved with a 15 number Bald Parker blade. Hemostasis was secured by pressure and 20% aluminum chloride solution. The final cosmetic outcomes (excellent, acceptable or poor) were assessed three months post-shave excision. Statistical analysis was performed using SPSS, v22. Data was evaluated by means of chi-square tests, and the phi coefficient. A P value of less than 0.05 was considered statistically significant to determine associations of age and gender to cosmetic outcomes.

Results: The mean age of included patients was 29.7±7.4 years. There were 30 (25%) male and 90 (75%) female patients. Out of these, 35 (29.2%) patients had excellent outcome, 75 (62.5%) patients had acceptable and 10 (8.3%) patients had poor outcome. The associations of gender and age to dermatological outcomes post-excision were significant (P<0.001). Sufficient evidence was collated to determine a relationship between age (Pearson Chi-Square = 113.94) and gender (Pearson Chi-Square = 97.143) to cosmetic outcomes (P<0.001). The phi (ϕ) coefficient also confirmed the significance of positive associations between the cosmetic outcomes to gender and age (ϕ= 0.974).

Conclusion: Shave excision presents as an exceedingly useful and inexpensive method for the removal of acquired melanocytic nevi especially in a low and middle-income country like Pakistan.

Introduction

Acquired melanocytic nevi refers to an organized collection of melanocytes, neural crest in origin that usually appear after the first year of life (1). This is a benign condition of the skin and is commonly seen in about 80-100% of the general population (2). Nevi may present on any bodily part, but are most commonly seen on the face (60%) (2). Acquired melanocytic nevi are well-circumscribed, round to ovoid, black-brown lesions, generally measuring 2mm to 6mm in diameter (3). Epidemiologic data indicate that the number of nevi peak during the second and third decade of life and the incidence decreases with age (4). Scientific literature suggests that firstly genetic predisposition, secondly cumulative sun exposure, and thirdly history of sunburn are risk factors for acquired melanocytic nevi. (4) Once melanocytic nevi are acquired, the risk of developing melanomas increases (5).

In our study, the main aim of treatment with excision for benign acquired melanocytic nevi was cosmetic improvement (5). For the treatment of benign melanocytic nevi, various surgical and non-surgical treatment modalities have been reported in scientific

literature. Of these, non-surgical methods include laser treatment, electrodessication and/or cryotherapy. Operative methods include surgical excision and shave excision (5). Concrete data is so far unavailable in the Pakistani population for cosmetic improvements post shave excision of benign acquired melanocytic nevi. Racial and genetic factors may be causative in the varied efficacy of melanocytic nevi management options in the Asian skin tones (6). The results of shave excision in the Pakistani, South Asian population may be more promising as compared to the Western populations.

Methods

We conducted a quasi-experimental study in the Department of Dermatology, at a tertiary care hospital in Pakistan (Sir Ganga Ram Hospital, Lahore). As per the Declaration of Helsinki and guidelines by the National Bioethics Committee (NBC) of Pakistan, written informed consents were obtained by 120 patients who fulfilled the inclusion criteria. The patients were enrolled through the outpatient dermatology department. Demographic history i.e. name, age, gender and address was obtained. Patients with history of keloid formation and atypical mole (mole with asymmetry, irregular border, variation of color and diameter more than 5mm) on clinical examination were excluded.

All enrolled patients underwent shave excision under intralesional local anesthesia (2% lignocaine with adrenaline). The lesion was shaved with a 15 number Bald Parker blade. Hemostasis was secured by pressure and 20% aluminum chloride solution. If required, thermocoagulation was achieved by electric cautery. The patients were followed every two weeks for a total time duration of three months post-surgery. Demographic data, namely the age and gender, the clinical information from the lesion excised, and the objective (i.e. cosmetic) outcomes were noted.

The final cosmetic outcome (excellent, acceptable and poor) was assessed three months post-shave excision. The outcome was considered excellent if there was no erythema, hyperpigmentation, hypopigmentation, hypertrophy or atrophy of the scar. It was considered acceptable if one or two complications out of erythema, hyperpigmentation, hypopigmentation, hypertrophy or atrophy of the scar occurred in any combination. The outcome was considered poor if more than two complications out of erythema, hyperpigmentation, hypopigmentation, hypertrophy or atrophy of the scar occurred in any combination (Table 1).

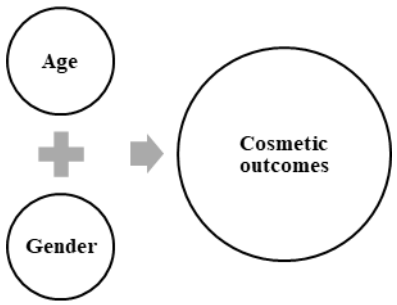
Statistical analysis was performed using SPSS, version 22 software (SPSS Inc., Chicago, IL, USA). Descriptive data were evaluated by means of chi-square tests and statistical significance levels. A P value of less than 0.05 was considered statistically significant to delineate associations of age and gender to cosmetic outcomes (Figure 1). The phi (ϕ) coefficient was additionally determined to test the association between the cosmetic outcomes to gender and age.

Table 1: Reference for objective dermatological outcomes post-shave excision

Category	Features
Excellent	0: erythema, hyperpigmentation, hypopigmentation, hypertrophy or atrophy of the scar
Acceptable	1-2: erythema, hyperpigmentation, hypopigmentation, hypertrophy or atrophy of the scar
Poor	>2: erythema, hyperpigmentation, hypopigmentation, hypertrophy or atrophy of the scar occurred in any combination

*Acceptable and/or poor complications were noted in any combination

Figure 1: The alternative hypothesis (Ha)



Results

Over a period of 3 months, 120 patients met the a-priori inclusion criteria of our study. The mean age of included patients was 29.7±7.4 years. There were 43 (35.8%) patients in the age range of 20-25 years, 34 (28.3%) patients in the age range of 26-30 years, 14 (11.7%) patients in the age range of 31-35 years, 19 (15.9%) patients in the age range of 36-40 years, and 10 (8.3%) patients in the age range of 41-45 years. In the distribution

of patients by sex, there were 30 (25%) male and 90 (75%) female patients.

The total healing time was 1-2 weeks. On final assessment at the end of the third month, a scar was observed in 54% of shave sites. The scar was flat and leveled with the surrounding skin in all shave sites except for sites, in which it was slightly protuberant. Scars at all shave sites were non-pigmented with no further retreatment required in any case. On obtaining feedback forms from patients, all patients (100%) were satisfied with the cosmetic outcomes. Table 2 shows the percentage distribution by outcome of shave excision for the patients.

Table 2: Objective Evaluation of the Cosmetic Outcome

Degree of Objective Changes	n (%)
Excellent	35 (29.2)
Acceptable	75 (62.5)
Poor	10 (8.3)
Total	120 (100)

The results from statistical tests were noted as follows. We found that age ($P<0.001$) and gender ($P<0.001$) had a strong association to cosmetic outcomes. On running chi-square tests, a P value of $P<0.001$ was obtained, providing sufficient evidence that a relationship exists between age (Pearson Chi-Square= 113.94) and gender (Pearson Chi-Square= 97.143) to cosmetic outcomes. The phi (ϕ) coefficient also confirmed the significance of positive associations between the cosmetic outcomes to gender and age (ϕ= 0.974).

Discussion

To our best understanding, this is the first study that statistically analyzes the associations of gender and age to cosmetic outcomes post shave excision of acquired melanocytic nevi in Pakistan. A 2005 study by Ferrandiz et al. attempted to find an association of gender and age to cosmetic outcomes but the results were insignificant. However, our findings (phi coefficient= 0.974) suggest a near perfect and significant association between the variables ($P<0.001$) (Figure 1). One of the most remarkable findings of this tertiary care hospital experience includes the cosmetic results of the included patients before the procedure (Figure 2), and on shave excision of the mole (Figure 3).

Melanocytic nevi are benign hamartomas or proliferations that consists of pigment-producing cells known as melanocytes that constitutively colonize the epidermal layer of the skin (5). Acquired melanocytic nevi are well circumscribed, benign, round to ovoid, black-brown lesions, generally measuring 2mm to 6mm in diameter (5). Populations with fairer skin tones, an increased tendency to sunburn, and poor tanning abilities are at a higher risk for malignant melanoma transformation wherein 20–30% of malignant melanomas arise from preformed acquired melanocytic nevi (7). In the Asian population, the risk of malignant melanoma is seemingly 0.2-2.2 persons per 100,000 population, which is much lower than the Caucasian population (7).

Figure 2: Pre-procedural findings in a patient

Figure 3: Cosmetic Outcomes on Shave Excision of the Mole.

Of note, the primary objective of excision of benign acquired melanocytic nevi is cosmetic improvement. Shave excision is an established less expensive surgical

method for removing benign skin lesions for cosmetic and functional reasons (8). Usually superficial shave excision is performed with a common scalpel blade for the removal of papular nevi. However, there is little deliberation about deep shave excision of macular melanocytic nevi with the razor blade technique (8). Deep razor blade excision presents an exceedingly useful and inexpensive method for the removal of suspicious macular melanocytic nevi that yields adequate specimens for pathologic interpretation (8).

In our study, the mean age of the patients was 29.7 years, with 25% males and 75% females, which is comparable to Altamura et al.'s study, which had a mean patient age of 26.5 years, with 36% males and 64% females (9). We presented excellent outcomes on shave excision aligned comparable to Lara et al.'s study, where excellent outcomes on shave excision were found in 32.8% patients, acceptable results were noted in 58.9% patients and poor findings were present in 8.3% patients (10).

Another study conducted by Lawrence et al. documented the removal of 82 nevi by shave excision, showed scar formation in 63% of the shaved sites (11). The scar was flat and in level with the surrounding skin except in two shave sites where it was slight protuberant. In our study on 120 nevi, scar formation was seen in 54% of shaved sites. All the scars were flat and non-pigmented except in three shaved sites, where they was slightly raised.

Limitations

There are certain limitations in our study. A long-term follow up could not be proceeded to check for recurrences post-treatment in our outpatient setting (12). We would not assess patient care and satisfaction with treatment using subjective evaluation of cosmetic results (13). Lastly, a histological analysis could not be conducted to assess the involvement of surgical borders neither could we assess any agreements between recurrence rates due to loss of follow-up. Future studies in Pakistan ought to overcome these limitations (14).

Conclusion

We have conducted a rare study for the first time in Pakistan addressing cosmetic outcomes in acquired melanocytic nevi, while noting gender and age contributions. However, future studies in the Pakistan ought to provide detailed and accurate information about the outcomes and complications if present in addition to patient satisfaction with the treatment if obtainable. We may now inform patients that the cosmetic results of shave excision in Pakistan are mostly acceptable (62.5%), although a limited subset (8.3%) may present with poor outcomes. The technique is of great significance in patients with multiple nevi, such as dysplastic nevi syndrome. Overall, shave excision for the treatment of acquired melanocytic nevi is a useful and inexpensive technique for the Pakistani, and by extrapolation, the South East Asian population.

Conflict of interest: All authors declare no conflicts of interest.

Disclosure: None to disclose.

Human/Animal Rights: No human or animal rights were violated during this study.

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