A REGIONWISE COMPARATIVE STUDY OF THE EXTENT OF POST PUNCH GRAFT SURGICAL REPIGMENTATION IN CUTANEOUS ACHROMIA

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One hundred and ten cases of stable cutaneous achromia constituted the sample population, of which 67 were females and 43 males. Age ranged between 6 and 71 years. A total of 1742 grafts were placed over 177 lesions on 29 regions and the cases were followed up to a maximum period of 2 years. The extent of maximum pigment spread (MPS) was noted in different regions of the body. It was observed that exposed parts exhibited better outcome vis-a-vis covered and shadowed part. MPS ranged between 0 to 10 mm., with an overall average of approximately 5.5mm.

Key words: Maximum pigment spread, Surgical repigmentation, Vitiligo

Introduction

The advent of corrective cutaneous surgery in the barren field of stable achromia cutis, has not only ushered a new era of hope and optimism, but also has stretched the horizon of the subject itself. Apart from the report of autographt response of dark skinned autograft in spotted guinea pigs by Lewin and Peck in 1941, [1] different surgical methods have evolved during the last three decades. Some of these are: thin Thiersch's graft, [2] epidermal grafting by suction blister,[3] punch grafting,[4] minipunch grafting,[5] cultured melanocyte grafting,[6] and organ cultured fetal skin allografts.[7] Among these, minipunch grafting is the least aggressive and reportedly evokes best response.[8]

Subjects and Methods

One hundred and ten cases of stable cutaneous achromia which encompass localised, generalised and segmental vitiligo, piebaldism, post burn depigmentation, pressure and chemical contact leucoderma constituted the sample population (Table.I). There were 67 females and 43 males. Age ranged between 6 and 71 years. A younger age group of predilection was noticed among the females.

The cases were stable for a period of 6 months to 19 years. Stability was adjudged from the history itself. The cases which were stable for at least 6 months were taken up. Koebner's phenomenon also served as a simple yet important guide in assessing stability. In case of slightest doubt, minigrafting test was performed.[9]

Punch grafting was performed with 2 mm punches. Initial chambers were made on or very close to the border of the lesion.[10] Non-adherent jelonet dressing for the recipient areas and opsite dressing for the donor areas

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were performed.[11] Patients were followed up fortnightly for the initial two months and then monthly upto a period of 24 months.

The extent of perigraft spread of pigment was measured and recorded. A regionwise maximum pigment spread (MPS) was charted.(Table I)

Table I. Type of disease

Localised vitiligo	42
Generalised vitiligo	
Acro orificial	8
Vulgaris	27
Segmental vitiligo	9
Piebaldism	1
Post-burn depigmentation	
Thermal	9
Chemical	3
Pressure leucoderma	6
Chemical contact leucoderma	5

Results

A total of 1742 grafts were placed over 177 different lesions on 29 regions in 110 subjects. No pigment spread was noticed in 4.51% of sites (8 sites). Maximum 9-10mm of pigment spread was noticed in only 1.12% of sites (2 sites) 5.8 mm pigment spread was observed in a majority of 66.65% of sites (118 sites) (Table II).

The MPS was studied region wise and it was found that maximum spread was obtained over face, where the mean MPS was 8 mm. A maximum of 10 mm pigment spread was noticed in a case of segmental vitiligo over the left cheek. Minimum spread was over lower lumbar region and dorsum of foot (2 mm). The area over bony prominence also showed a poorer outcome, eg. elbow (3 mm), knee (3 mm) and medial malleolus (2.5 mm). Covered parts like groin (3 mm) and shadowed points like submandibular region (5 mm) showed a comparatively lesser MPS (Table III). Overall average was 5.5 mm. Spread of pigment continued upto the maximum period of follow up of 2 years with gradual better colour blending and matching with the normal surrounding skin. Initial hyperpigmentation, if any, almost always got corrected with passage of time.

Table II. Maximum Pigment spread (MPS)

	Extent of MPS	No of Sites	Percentage(%)
A.	No pigment spread	8	4.51
B.	1-2 mm	7	3.95
C.	3-4 mm	42	23.27
D.	5-6 mm	68	38.41
E.	7-8mm	50	28.24
F.	9-10	2	1.12

Table III. Regionwise comparisons of maximum pigment spread (MPS)

	Regions	Mean MPS(mm)
1.	Frontal scalp	7
2.	Forehead	6.8
3.	Hairline	6
4.	Eyebrow	5
5.	Eyelid	7
6.	Post auricular area	5.5
7.	Nape of the neck	6
8.	Cheek	8.5
9.	Maxillary area	8
10.	Parotid area	8
11.	Mandibular area	8
12.	submandibular area	5
13.	Lip	8.5
14.	Chin	6
15.	Shoulder	8
16.	Infraclavicular area	6.5
17.	Inframammary area	5.5
18.	Waist	5
19.	Scapular	4
20.	Lower lumbar	2
21.	Groin	3
22.	Elbow	5
23.	Forearm	7
24.	Dorsum of hand	6
25.	Thigh	5
26.	Knee	3
27.	Leg	4.2
28.	Medial malleolus	2.5
29.	Dorsum of foot	2

Discussion

Various observations are available for the extent of post punchgraft surgical repigmentation in different achromic conditions of skin

Orentriech and Selmanwitz observed

that when 1 or 2 mm grafts were employed, the pigment spread was consistenlty 1mm.[4] Falabella reported 2mm, 2-3 mm, 3mm and 4mm pigment spread from 1 mm, 1.2mm,2 mm and 3mm sized grafts respectively. He observed 2 mm and 3mm sized grafts were more visible and scars more noticeable as compared to 1mm graft. But repigmentation from a 1mm graft is lighter than desired.[8,12] Westerhof remarked that pigment cells apparently do not migrate more than 5 mm beyond their site of residence.[13]

Indian experience in this context is somewhat more encouraging. Savant in his series noted an average of 5-10 mm pigment spread and 15 mm in very dark individual. [14] Das and Pasricha observed 7-12 mm pigment spread with a maximum of even 22 mm. [15] Singh and Bajaj found 5-12 mm spread in majority of the patients with a maximum of 17 mm in one patient. [16]

Our results are comparable with that of other workers of this subcontinent. A large area of repigmentation in comparison to that of our western counterparts is a point to be stressed upon. This may be due to the fact that the majority of the population here belongs to the darker skin types (IV,V and VI) and it is known that racial colour factor plays a part in pigment spreading.[17] In our study pigment spread did not stop after 12 months as observed by Boersma et al, [18] it continued upto the maximum period of follow-up.

To the best of our knowledge, previously no worker has tried to chart and analyse the extent of post punch graft surgical repigmentation on a regionwise basis.

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