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ORIGINAL ARTICLE

AN EVALUTION OF EFFECT OF TOPICAL MITOMYCIN-C AFTER SURGICAL EXCISION OF KELOID/HYPERTROPHIC SCAR

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ABSTRACT: The present study is to assess the ability of topical mitomycin–c to prevent the recurrence of surgically excised keloid / hypertrophic scar. The study was a prospective randomized controlled trail on 24 patients. The study was conducted on two groups of patients i.e. study (case) in which mitomycin-c applied topically on resected bed (0.5 mg/ml for at least 5 minute) & Control in which mitomycin-c not applied /or intralesional steroid is used. The cases are followed up pre operatively as well as 1 and 6 month post operatively. We found that no significant beneficial effect have been observed if mitomycin c (case) is used topically on resected bed after surgical excision of keloid/ hypertrophic scar.

KEYWORDS: Keloid, hypertrophic scar, mitomycin-c.

INTRODUCTION: Keloids are benign, well-demarcated tumours of fibrous tissue overgrowth that extend beyond the original defect. These are characterized by firm, mildly tender, bosselated tumours occurring more frequently on shoulders, chest, neck, upper arms and cheeks.[1]

Keloids occur in all age groups although mainly in the third decade of life. Both sexes are equally affected. The disease is more common in blacks as compared to whites.[2] Keloids are commonly found in Asian and African populations.[3]

The etiology of keloids is unknown but a number of precipitating factors e.g. surgery, tattoos, bites, vaccination, blunt trauma, burns and lobular piercing. They may occur spontaneously or may be familial.[2,3] similarly; many other dermatological diseases are associated with keloid formation.

Mitomycin C is an antitumor antibiotic isolated from *Streptomyces caespitosus*. Lee.[4] has shown that mitomycin C has an antifibroblastic effect without inhibiting epithelialization. Exactly how this occurs is still not understood, but there may be and inability of the fibroblast to proliferate, thus suppressing fibrosis and scar formation. Mitomycin C has been used recently in an attempt to interfere with the ability of the body to complete the scarring process. This drug has been shown to prevent scar tissue formation after glaucoma filtration surgery, canine subglottic surgery, pediatric choanal atresia repair, rabbit maxillary antrostomy surgery, and after tracheal stenosis repair.[5,6,7,8] there have been no reports of adverse reactions to the mitomycin C or a lack of epithelialization.

METHODS AND MATERIALS: The present study has been carried on patients attending the outdoor in King George's Medical University. In this study there were 24 patients having keloid / hypertrophic scar on the body and having consent for surgical excision followed by application mitomycin-c on resected bed. The study was a prospective randomized controlled trial. The study was conducted on two groups of patients; Case in which mitomycin –c applied topically on resected bed (0.5 mg/ml for at least 5 minute) and Control in

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which mitomycin-c not applied /or intralesional steroid is used. Comparative analysis done of the percentage change of thickness and volume between preop final postop volumes. Statistical analysis done applying student 't' test and independence sample 't' test. The effectiveness of treatment analysed on the basis of VAS score.

OBSERVATIONS:

	Frequency	**Percent**
Abscess	2	8.3
Ear piercing	7	29.2
Trauma	4	16.7
Unknown	11	45.8
Total	**24**	**100.0**

Table 1 : Etiology

	No. of cases	**Percent**
Irregular	1	8.33
Dumble	1	4.17
Elliptcal/ Elongated	5	20.83
Oval	3	12.5
Rectangular	5	20.83
Rounded	4	16.67
Rounded irregular	5	20.83
Total	**24**	**100.0**

Table 2 : Shape of the lesion

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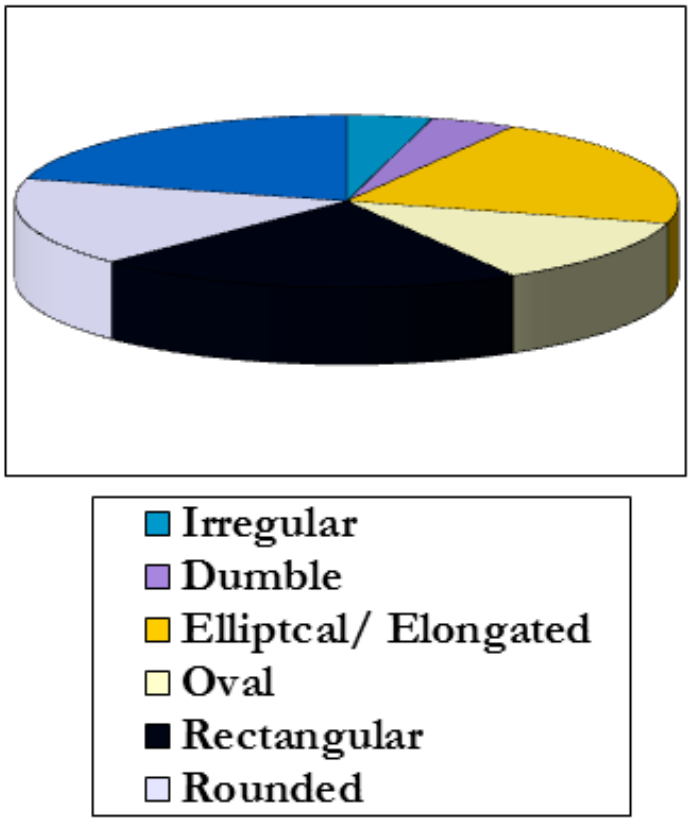

	No. of cases	Percent
Ear	11	45.8
Back	4	16.7
Chest	4	16.7
Neck	1	4.2
Hand	1	4.2
Abdomen	2	8.3
Shoulder	1	4.2
Total	**24**	**100.0**

Table 3 : Location of the lesion

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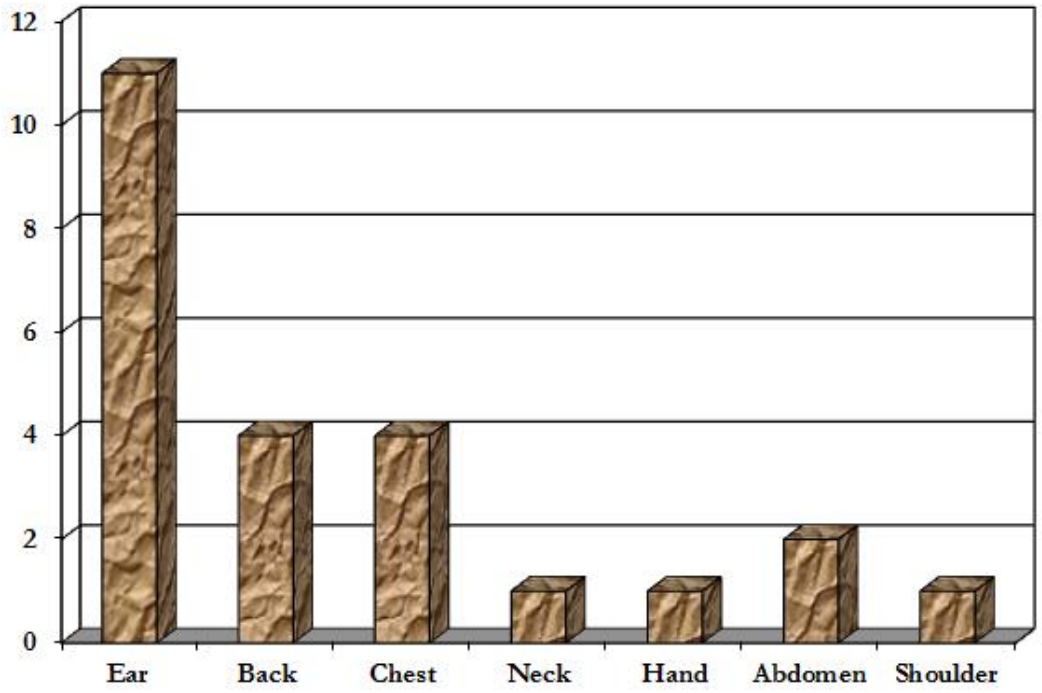

SL. No.	Comparison	Control			Cases		
1.	Pre –op vs imm. Post-op	1.717±2.318	3.766	0.001	3.451±3.435	4.818	0. 000
2.	Pre-op. vs 1 month	1.885±2.537	3.485	0.002	3.626±3.662	4.749	0.000
3.	Pre-op vs 6 month	2.154±2.770	3.648	0.002	3.897±3.888	4.807	0.000
4.	Imm. Post-op vs 1 month post-op	0.169±0.807	0.980	0.338	0.175±0.645	1.304	0.206
5.	Imm.post-op. Vs 6month post-op	0438±0.956	2.146	0.044	0.446±0.855	2.501	0.020
6.	1month post-op. vs 6 month post- op.	0.269±0.456	2.766	0.012	0.270±0.596	2.175	0.0413

Table 4: Comparison of Mean Changes in Volume Size Among Cases and Controls

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SL. No.	Group	Vas (mean ±SD)	't'	'p'
1.	Control	5.41±1.14	0.045	0.964
2.	Cases	5.39±1.47		

Table 5 :Comparison of visual analogue score between two group

SL. No.	Correlation	Comparison parameter	'p'
1.	Vas & percentage change in thickness at final follow up from immediate post- operative values	r=0.037	0.571
2.	Rate of Growth between two groups	X^2=1.112	0.292

Table 6 : CORRELATIONS BETWEEN VARIOUS VARIABLES

DISCUSSION: Historically, keloids were first described by Alibert in 1806. He called them "les cancroides," which was later changed to "cheloide" in 1816, referring to the clawlike extension and tendency to extend laterally, like crabs.[9]

Keloids are abnormal fibrous proliferations located on the dermis and characterized by elevation, extension laterally into the surrounding normal tissue, continued growth, absence of regression, and a strong tendency to recur after excision, associated frequently with symptoms of pain and pruritus.[10] A systemic keloidal susceptibility is supported by the fact that severe cutaneous trauma may cause keloids in some individuals, but not in others. A 1% to 3% familial occurrence exists, and data support that keloidal tendency is transmitted by an autosomal gene of incomplete dominance and variable expressivity.

Pathologically, the keloid is an irregular, dense connective tissue mass, localized to the dermis, and non-existent submucosally. Keloids immunologically contain increased levels of immunoglobulins A, G, and M by the direct immunofluorescent antibody method levels well above those of normal skin.[11] it is also characterized by increased levels of albumin, suggestive of chronic or attritional microvascular leakage during the tenure of the lesion. Diegelmann found significant increases of serum alphaglobulins and mast cells that would make the presence of immunoglobulins about the blood vessels of the papillary dermis of keloids of particular interest.[12,13]

Biochemically, it has been noted that keloids have increased alpha macroglobulin, acid phosphatase activity, glucose-6-phosphate dehydrogenase levels, alanine transaminase activity, and more recently, proline hydroxylase activity-far beyond the level of collagenase activity. These levels stimulate fibroblastic proliferation and inhibit activity of the collagenase by action of alpha-2-macroglobulin and alpha- I –antitrypsin thereby generating and sustaining the formation of keloids. Following treatment plans are in use i.e. surgical excision, radiation therapy, pressure therapy, cryotherapy, silicone gel sheeting and other dressings, intralesional corticosteroids, interferon, fluorouracil, Laser & Other treatment.

CONCLUSION: Based on the above finding it can be stated that no significant beneficial effect have been observed if mitomycin c (Case) is used topically on resected bed after surgical excision of keloid/ hypertrophic scar.

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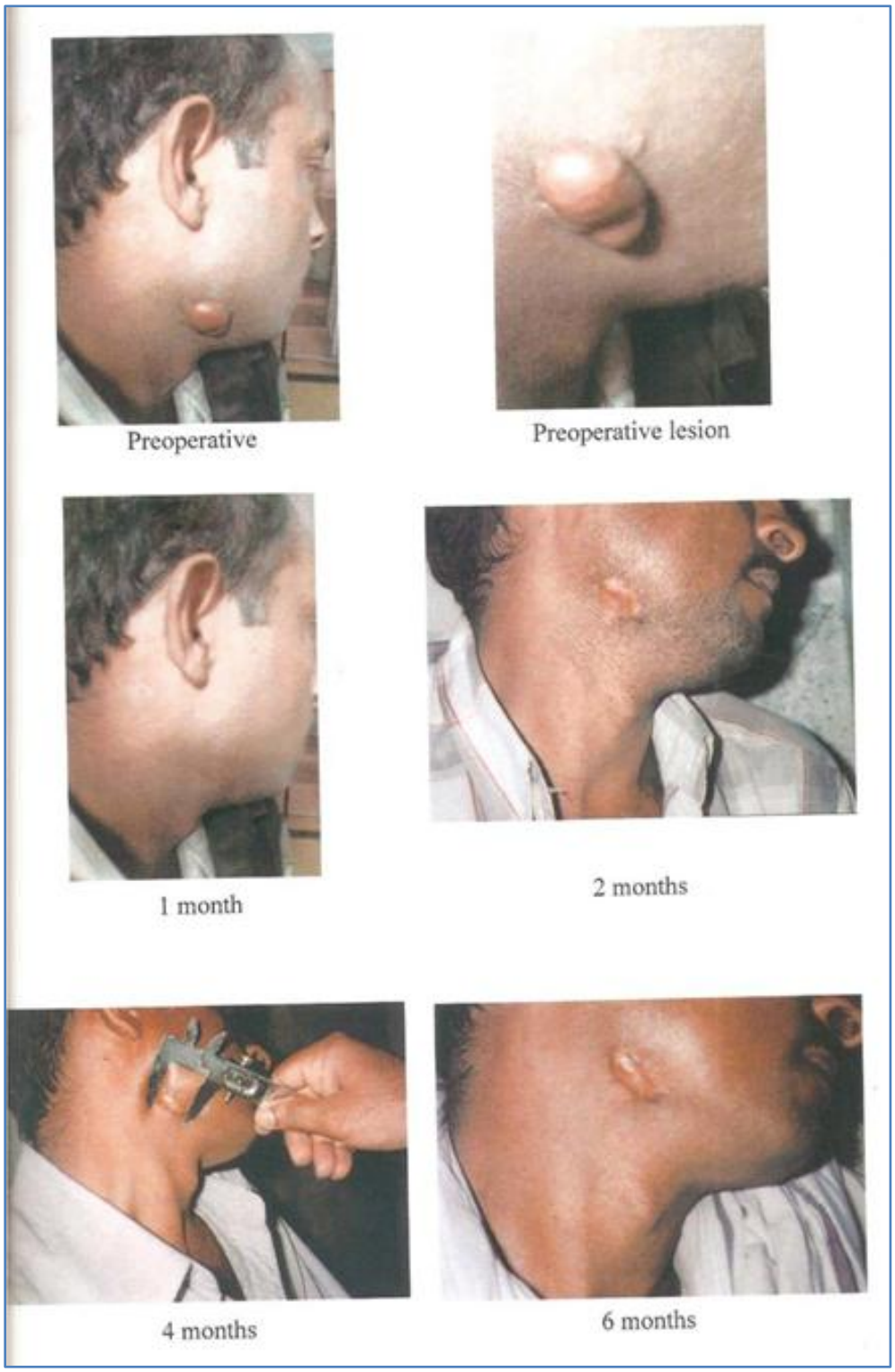

Fig. 1

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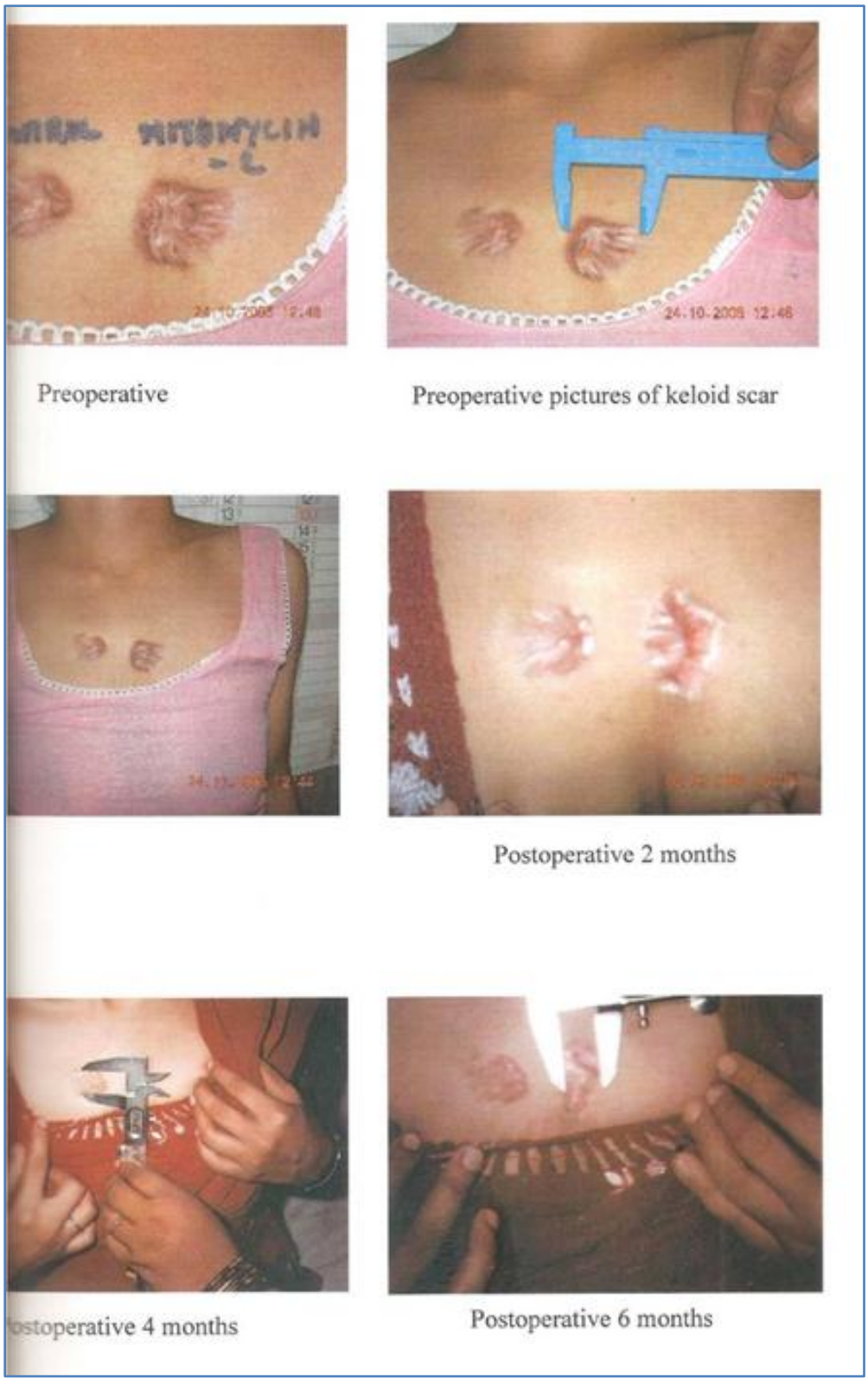

Fig. 2

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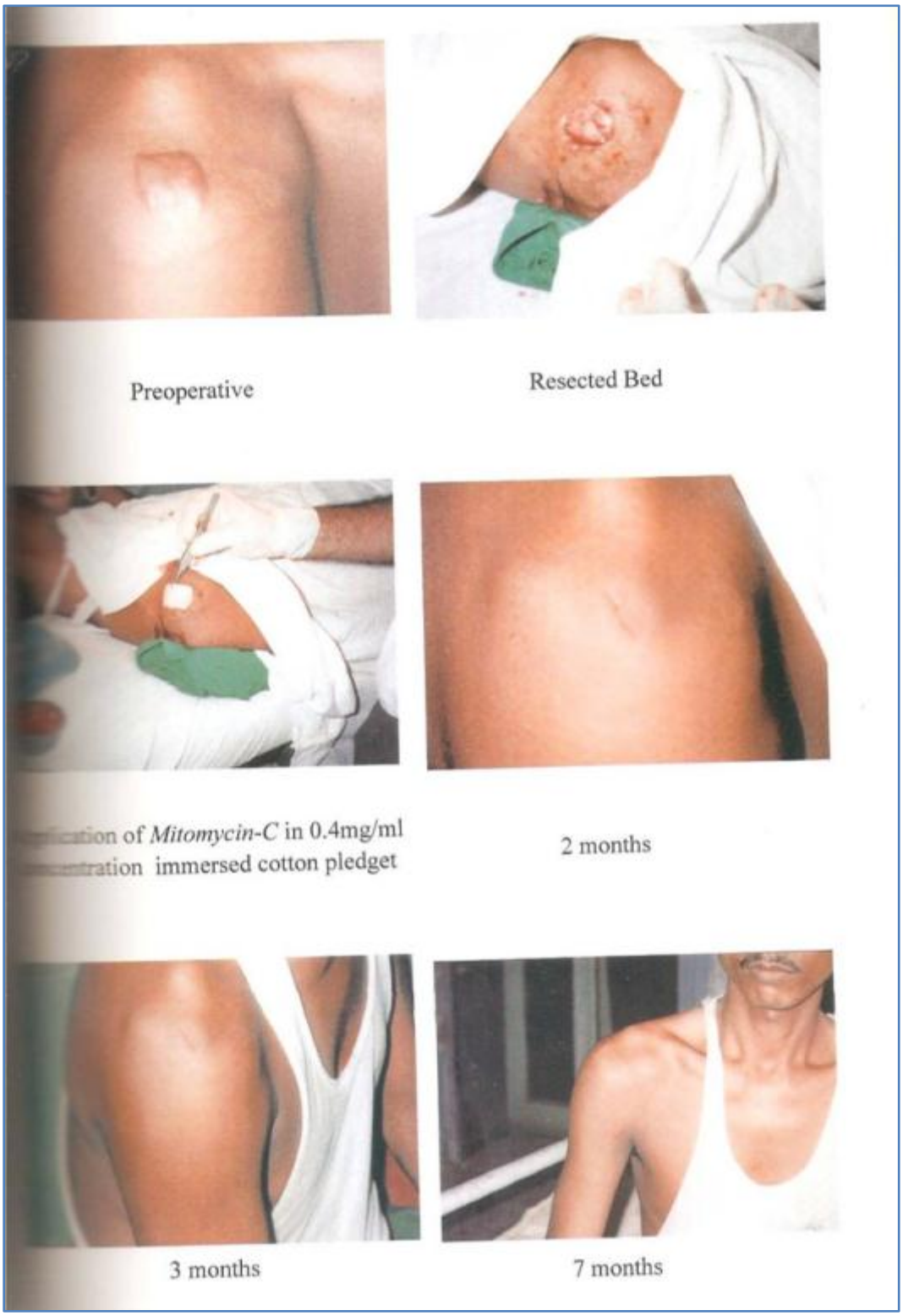

Fig. 3

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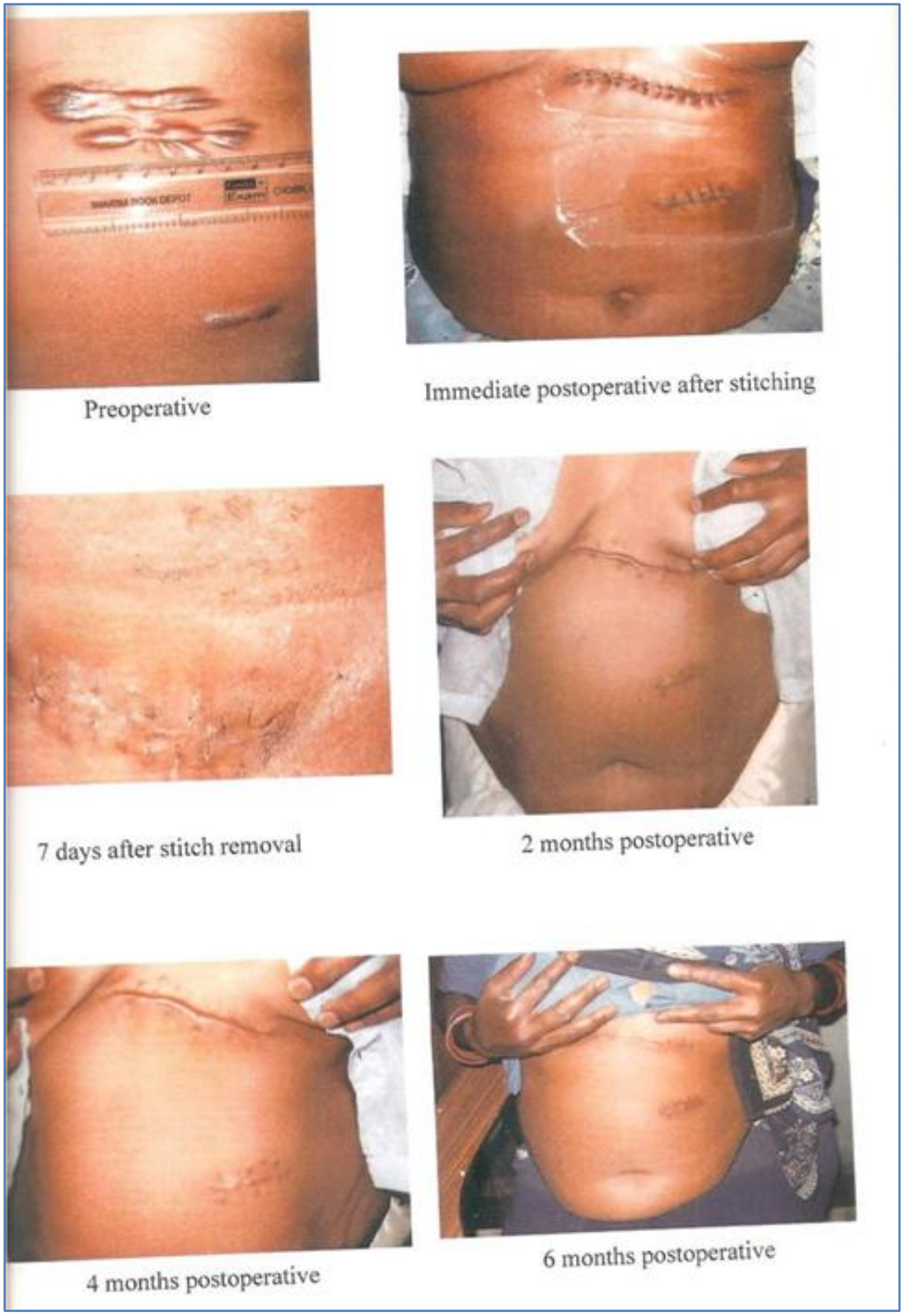

Fig. 4

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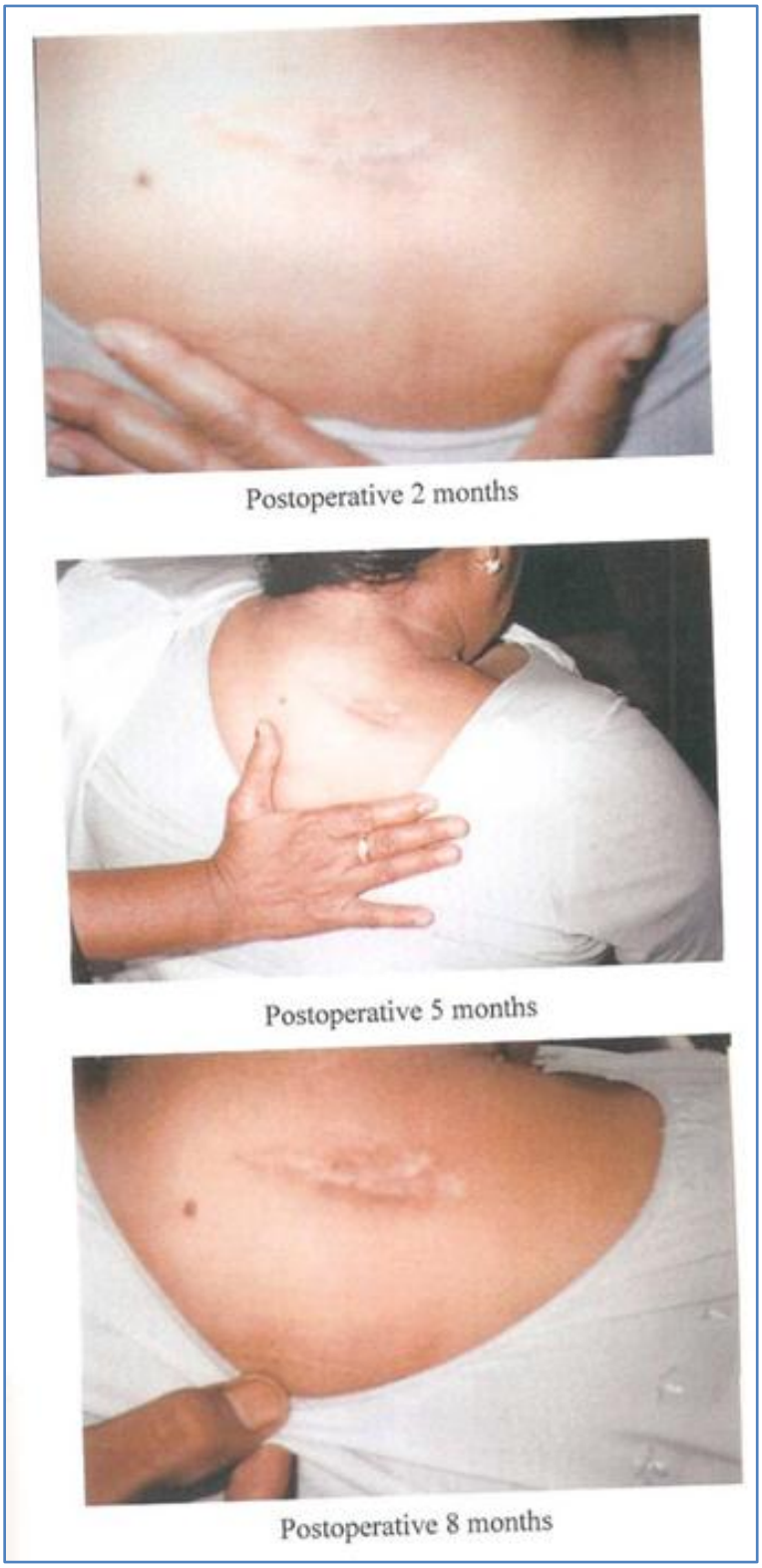

Fig. 5

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