



Research Article

www.ijrap.net

(ISSN Online:2229-3566, ISSN Print:2277-4343)



A COMPREHENSIVE STUDY OF KAKSHADHARA MARMA WITH SPECIAL REFERENCE TO WINGED SCAPULA

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Received on: 02/02/22 Accepted on: 13/04/22

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DOI: 10.7897/2277-4343.130350

ABSTRACT

The Marma sharira has a special importance in Sharira Sthana. There are 107 Marma present in the human body, surrounded by Mamsa, Sira, Snayu, and Asthi and Sandhi. The Kakshadhara Marma is a Snayu Marma, located in between the axilla and thorax on both sides. Injury to Kakshadhara Marma leads to Pakshaghata. The area surrounding Kakshadhara Marma consists of the brachial plexus and its branches and the presence of the Axillary artery. Winging of scapula caused by injury of long thoracic nerve mainly, sometimes dorsal scapular nerve and spinal accessory nerve. The Most common muscles involved are Serratus anterior and Rhomboidus, but occasionally trapezius muscle is involved. The winged scapula presents with drooping of the shoulder, weakness in the neck, shoulders, and arm muscles, associated with pain and discomfort in the neck region, shoulders, and back.

Keywords: Marma, Kakshadhara Marma, Snayu Marma, Brachial plexus, Winging of Scapula.

INTRODUCTION

Ayurveda is the eternal science of life. In Ayurveda, understanding the functional and structural constitution of the body is very important. Even though all the body parts are significant, both from anatomical and surgical points of view and in Ayurvedic or modern science, the vital spot or Marma is described with immense importance. They can cause severe effects on the individual health if injured. The Marma is defined as an anatomical location where the Mamsa, Sira, Snayu, Asthi and Sandhi unite together ¹.

The Kakshadhara Marma is the Snayu Marma located in Urdhasakha, two in number. The total number of Marma in the human body is 107 in number, where Snayu Marma is 27, where Vagbhatta mention 23 in number². Injury to Kakshadhara Marma leads to Pakshaghata (Paralysis).

Aims and Objectives: To assess the location and structural composition of Kakshadhara Marma. And analyse the details about winging of Scapula.

MATERIALS AND METHODS

Literary study: Classical textbooks of Ayurveda and Contemporary science, journals, publications, articles, e-journals etc.

Observational study: Dissection was performed in the PG Department of Rachana Sharir, Sri Ganganagar College of Ayurvedic Science and Hospital, Sri Ganganagar, Rajasthan,

India. The region of Kakshadhara Marma and surrounding area was dissected, and complete anatomical study was done.

Assessment Criteria: Based on cadaveric dissection, the surface and regional anatomy of the Kakshadhara Marma (around the axillary region) was determined. With the help of literary and observational studies, the location and anatomical structure of Kakshadhara Marma were approximated. The clinical and pathological features of winging of the scapula are also described by studying from various publications.

LITERARY REVIEW

Classical review

The word Kaksha means Bahu Moolam, and Kakshadhara means the area related to the axilla. The Kakshadhara Marma is in the upper extremity, but Vagbhatta mentioned that Kakshadhara Marma is similar to Vitapa Marma; injury to Marma causes deformity in shoulder joint³. Snayu is one of the Upadhathu, like rope-like fibre by which bowstrings are prepared. It is the binding materials which bind Mamsa, Asthi and Meda. Acharya has mentioned there is a total of 900 Snayu present in the human body, which is 600 in Sakha, 230 in Madhya Sharira and 70 in urdhvajatru^{4,5} (Table 1).

Contemporary review

The axilla is a space between the upper part of the arm and lateral thoracic wall. It contains the axillary artery, axillary vein and brachial plexus. The axillary artery continues the 3rd part of the subclavian artery, divided into the first, second, and third parts. The first part gives superior thoracic artery; the second

part branched into thoracoacromial and lateral thoracic arteries. In contrast, the third part branched into a subscapular artery, anterior and posterior circumflex humeral artery⁹. The axillary vein continues the basilica vein that lies on the medial side of the axillary artery. It receives a cephalic vein in the upper part¹⁰. The brachial plexus is formed by ventral rami of C5-T1, which supply the upper limb. It consists of roots, trunks, divisions, and cords—ventral rami of C5-T1 form the root. The trunk has three parts; the upper part is formed by C5 and C6, the Middle part is

formed by C7 and Lower part is created by C8 and T1¹¹. Each trunk is divided into anterior and posterior divisions. There are three cords; the Lateral cord is formed by the anterior division of the upper and middle trunk. The medial cord is formed by the anterior division of the lower trunk and Posterior cord is included by the posterior division of all three trunks. Branches of brachial plexus are divided into supraclavicular and infraclavicular parts. The following branches are present¹².

Table 1: Features of Kakshadhara Marma

Features of Kakshadhara Marma	Details
Location	In between lateral 1/3 rd of thorax and medial 2/3 rd of axilla ⁶ .
Number	Two
Type (predominant structures)	Snayu Marma
Parinama	Vaikalyakara ⁷
Injury effect	Pakshaghata (paralysis) ⁶ .
Measurement (Pramana)	One Angula ⁸

Table 2: Branches of Brachial plexus

Supraclavicular branches	Infraclavicular branches
From root- <ul style="list-style-type: none"> • Dorsal scapular nerve (C5) • Long thoracic nerve (C5-C7) • A branch to join long thoracic nerve • Muscular branches to longus coli and scalene 	From lateral cord – <ul style="list-style-type: none"> • Lateral pectoral nerve • Musculo-cutaneous nerve • Lateral root of the median nerve
From trunk- <ul style="list-style-type: none"> • Nerve to subclavius (C5, C6) • Suprascapular nerve (C5, C6) 	From the medial cord- <ul style="list-style-type: none"> • Medial pectoral • Medial pectoral nerve of the forearm • Medial pectoral nerve of the arm • Ulnar nerve • Medial root of the median nerve
	From the posterior cord – <ul style="list-style-type: none"> • Upper subscapular nerve • Thoraco-dorsal nerve • Lower subscapular nerve • Axillary nerve • Radial nerve



Figure 1: Brachial plexus along with axillary artery and vein



Figure 2: Brachial plexus and its branches

OBSERVATION AND DISCUSSION

The diameter of Kakshadhara Marma is one Angula, so after removal of the layers of the axillary region following structures are seen in this area – the brachial plexus and its branches, axillary artery and its branches, axillary vein and its tributaries (Figure 1 and 2).

Acharya Sushruta mentioned Kakshadhara Marma is a Snayu Marma, while Vagbhata said it is Sira Marma¹³. While explaining the injury effect of Kakshadhara Marma, Commentator Ghanekar mentioned that it should be considered as Snayu Marma rather than Sira Marma¹⁴. The prominent structure around the axillary region is the brachial plexus; it is supplied mainly by the scapular, pectoral region and upper limb.

Different types of Brachial plexus injury are seen; Leffert classification of brachial plexus injury, Millesi classification of brachial plexus injury and Classification of the anatomical location of the injury. Some authors classified the injury site as supraclavicular, infraclavicular and retro clavicular, or it may be upper plexus, lower plexus and global¹⁵. Scapular winging or winged scapula is a debilitating condition that leads to the limited functional activity of the upper extremity, characterised by a wing-like appearance on the upper back. It is due to mainly long thoracic nerve; sometimes Dorsal Scapular Nerve and Spinal accessory nerve is also involved. Injury may be due to traumatic, sports-related injury, iatrogenic, Occupational or spontaneous. The involved muscles are serratus anterior (primary, Rhomboid and Trapezius (rare)¹⁶.

The most common cause of primary scapular winging is serratus anterior muscle palsy due to compression, traction, and laceration¹⁷. A person presents with pain around the affected shoulder, and which may radiate to the arm and scapula. Usually, medial scapular winging is seen at rest, and the scapula is shifted medially and superiorly compared to the normal side. The Trapezius and Rhomboid muscle palsy leads to lateral displacement of scapula¹⁸. Rhomboid muscle paralysis is less common than trapezius muscle paralysis. In Rhomboid muscle paralysis, Patients may present with vague shoulder and upper arm pain, that mimics thoracic outlet syndrome.

CONCLUSION

The Kakshadhara Marma is located in between the thorax and axilla; based on the cadaveric observation, it is considered that the brachial plexus and its branches are the possible structure under one Angula diameter. The brachial plexus is the primary nerve plexus which supplies the scapular, pectoral region and upper limb. Scapular winging is a rare, potentially debilitating condition due to various factors. Primarily Injury to the long thoracic nerve causes Scapular winging, which leads to weakness in the muscles of your neck, shoulders, and arm, pain and discomfort in your neck, shoulders, back and drooping shoulder.

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Cite this article as:

Singh Dharmesh Kumar *et al.* A comprehensive study of kakshadhara marma with special reference to winged scapula. Int. J. Res. Ayurveda Pharm. 2022;13(3):17-20 <http://dx.doi.org/10.7897/2277-4343.130350>

Source of support: Nil, Conflict of interest: None Declared

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