FUNCTIONAL EVALUATION OF KOORPARA MARMA (ELBOW REGION) IN ACCIDENTAL TRAUMA

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ABSTRACT
Marmasthana is a vulnerable point and is the seat of prana or life. According to classification based on Parinama (Prognosis) and Rachana (Anatomical predominance), Koorpara Marma (situated at elbow region) is Vaikalyakara (causing disability) and Sandhi Marma (bony joints) respectively. If marmas are injured they do not always result into death but can cause disability or various diseases, which are difficult to cure. If desired to apply concept of Marma in Shalyatantra, it is essential to confirm the exact form of structure, function and importance of Marma Sharira with help of Ayurvedic fundamentals and with its comparison to modern science on the basis of clinically based study. Nowadays, accidents are more common, its prevalence is more especially in road traffic accidents. Traumatic deformities commonly occur at Elbow region which is exposed easily to trauma, causing restricted movements of forearm. At the elbow regions muscular tear, hematoma, ligament tear, bony deformity may occur. Hence, a conceptual and subclinical study was carried out to evaluate Koorpara Marma Viddhata (trauma) in relation to accidental trauma from functional aspect with the help of case record form and use of Goniometer for Sandhi Pariksha (examination), Oxford pain chart for pain threshold in 30 diagnosed patients of Koorpara Sandhi Marma Vikalata. Results were tabulated in form of functional deformities seen.

Keywords: Koorpara Marma, Vaikalyakara Marma, Functional, Sandhi Marma, Accidental trauma

INTRODUCTION
Knowledge of Marma can be traced back to vedic period. Marmachikitsa is getting more and more impetus now a day, particularly in western world. As far as traumatology is concerned the importance of Marmachikitsa is reckoned widely in the western world.

Marma Sharira is the unique province of Ayurveda. The countries like China, Japan, and Srilanka are using certain vital points in the treatment of various ailments, which coincide with Marma points.

Marma concept is stated to be the half part of Shalyatantra, trauma to which must be prevented during surgical procedures1. Types of accidental trauma at the site of Marma2,3.

Patana- falls down.
Peedana - trauma by hand.
Prahara - trauma by stick.
Akshepana - pull with great force.
Vyalamrigadashana- trauma by animal’s nails teeth etc.

**Trauma to Marma region**

Now a day accidental or traumatic deformity commonly occurs at the elbow joint which causes restricted movements of forearm. Due to this great significance, it is necessary to carry out research work related to it. Hence, it is need of hour, to study different Marma in an elaborate manner by digging out all the treasure about it in Ayurvedic literature and analyze it in relevant clinical conditions, especially the surgical ones.

**Trauma to VaikalyakaraMarma**

As Koorpara Marma is the Vaikalyakara Marma, which is situated at elbow region, any injury to it causes disability along with deformity of elbow region.

**Trauma to Sandhi Marma**

Sandhi Marma injury is very painful, even after wound heals some or the other form of deformity is seen or there is decrease in strength and movement of joint. In case of KoorparaMarma, bony deformities like cubitusvulgus, cubitusvarus, hyperextension of elbow joint due to supracondylar fracture, epicondylar fracture etc. is seen.

Anatomical position of KoorparaMarma is studied with the help of various textual references with the help of dissection on cadaver.

In case of SandhiMarma, the site of injury feels as though full of thorns, even after healing (of wound) there is crooked or bend or curved elbow, lameness, decreased strength and movement and emaciation and swelling of the joints.

Hopefully, present work may prove beneficial and be a guideline to vaidyas in Shalyatantra, Chikitsa and those interested in Marma Chikitsa as well.

**MATERIALS AND METHODS**

Study was conducted in following phases:

1. Conceptual study: Was carried out by literary review of following texts:

   a) Ancient materials from Brihat-Trimmi
   b) Relevant materials

   Marma vimarsha – Ram Raksha Pathak
   Rachana Sharira – K.K.Pandey
   Bruhat Shariram – Varier Parishdyam
   Shabdharth Sharira – Gaud
   SushrutSamhita – D.G.Thatte
   PratyakshaShariram – GananathSen

   Ayurveda Rahasya Deepika – B.G.Ghanekar

   c) Modern Literature
   - Gray’s Anatomy
   - Textbook of Orthopaedic – Adams Hamblen
   - Essential Orthopaedic – J.Maheshwari
   - Clinical Orthopaedic Examination – Ronald Mc Rae

2. Subclinical study:

   This was conducted by studying the cases of patients undergone accidental trauma for various conditions related to elbow region on retrospective basis. 30 diagnosed patients of KoorparaSandhiMarmaVikalata in relation to accidental trauma was selected.

   Inclusion criteria

   3. 30 diagnosed patients of accidental trauma to Koorpara region

   Exclusion criteria
1. Arthritis
   i. Pyogenic Arthritis
   ii. Rheumatoid Arthritis
   iii. Tubercular Arthritis
   iv. Osteo Arthritis
   v. Neuropathic Arthritis
   vi. Hemophilic Arthritis

2. Other diseases
   i. Paraplegia
   ii. Hemiplegia

**METHODOLOGY**

**Conceptual study**
   i. An overview of Marma concept.
   ii. Various opinions regarding Koorpara Marma as Sandhi Marma and Vaikalyakara Marma from all possible resources.

**RESULTS AND DISCUSSION**

1.1 Percentage of the types of accidental trauma

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Type of accidental trauma</th>
<th>No. of Patients out of 30</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>R.T.A</td>
<td>14</td>
<td>46.67</td>
</tr>
<tr>
<td>2.</td>
<td>Fall</td>
<td>14</td>
<td>46.67</td>
</tr>
<tr>
<td>3.</td>
<td>Dash</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>4.</td>
<td>Lifting heavy weight</td>
<td>1</td>
<td>3.33</td>
</tr>
</tbody>
</table>

Table 1.2 Sthanika Koorpara Sandhi Marma Viddha Lakshanani (Functional deformity)

<table>
<thead>
<tr>
<th>Sr. no</th>
<th>Lakshnani</th>
<th>Observed in patients (out of 30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Khanjata</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>2.</td>
<td>Balakshaya</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>3.</td>
<td>Cheshiakshaya</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1.3 Vaikalyakara Marma Viddha Lakshanani (observed after 2 months of trauma)

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Lakshanani</th>
<th>Observed in patients (out of 30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Klesha</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Ruja</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1.4 Ruja (pain) found after 2 months

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Structures</th>
<th>Observed in patients (out of 30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
</table>
1. **No Pain** 00 00
2. **Mild pain** 00 00
3. **Moderate Pain** 30 100
4. **Severe Pain** 00 00

Table 1.5  Types of bony fractures seen in patients

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Type of bony fracture</th>
<th>Observed in patients (out of 30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Supracondylar fractures</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>2.</td>
<td>Radial head(Absent/Removed)</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Medial Epicondyle Fractures</td>
<td>5</td>
<td>16.67</td>
</tr>
<tr>
<td>4.</td>
<td>Olecranon Process Fractures</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>Radial head fracture</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>6.</td>
<td>Lateral Epicondyle Fracture</td>
<td>2</td>
<td>6.67</td>
</tr>
</tbody>
</table>

Table 1.6  *Kriyatmak Vikruti* (Functional deformities at the structures) at *KoorparaMarma* region

<table>
<thead>
<tr>
<th>Normal angle of Flexion</th>
<th>Mean angle of flexion in traumatic patient</th>
<th>Normal angle of Extension</th>
<th>Mean angle of extension in traumatic patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>145°</td>
<td>113.33°</td>
<td>0°</td>
<td>10.5°</td>
</tr>
</tbody>
</table>

Mean of flexion in traumatic patients was observed 113.33°, where as normal angle of flexion is 145°. This indicates that angle of flexion is reduced by 31.63.

Mean of Extension in traumatic patients was observed 10.5°, where as normal angle of Extension is 0°. This indicates that angle of Extension is reduced by – 10.5.

Table 1.7  *Kriyatmak Vikruti* (Functional deformities at the structures) at *KoorparaMarma* region

<table>
<thead>
<tr>
<th>Normal angle of Supination</th>
<th>Mean angle of Supination in traumatic patient</th>
<th>Normal Angle of Pronation</th>
<th>Mean angle of Pronation in traumatic patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>80°</td>
<td>72.66°</td>
<td>75°</td>
<td>65.83°</td>
</tr>
</tbody>
</table>

Mean of Supination in traumatic patients was observed 72.66°, where as normal angle of Supination is 80°. This indicates that angle of Supination is reduced by 7.34

Mean of Pronation in traumatic patients was observed 65.83°, where as normal angle of Pronation is 75°. This indicates that angle of Pronation is reduced by 9.17.

On elaboration of data of 30 patients, RTA(Road Traffic Accident) was found as the major cause of trauma (46.67%). When a person falls down from a vehicle (especially two wheeler) during RTA he/she directly slides over the road on the elbow because of defence mechanism. History of *Patana* (fall) was found in 28/30 patients.

1/30 patient had history of dash by a heavy vehicle at the elbow region. Patient had medial collateral ligament tear and joint collection resulting in restricted movements.

1/30 patient had history of daily heavy weight lifting, resulting in stretching of muscles and ulnar nerve thickening. The observational finding reveals *Sandhi Viddhata* more than any other *Kriyatmak Vikritis Sandhi Rachana* is prominently present at the elbow region.
As per the symptoms of trauma to Sandhi quoted by Vagbhata following observations were seen\(^6\).

*Vastushukairivakeerna* (fragments of bones disperses like thorns over the traumatized area) was seen in 80% cases.

*Kuni* (crooked or bent or curved joint that remains even after surgical intervention) was seen in 100% cases. Even though there is much reduction of severity over the traumatized area, yet the structural and functional deformities remain over a long duration.

*Sandhishosha* (muscle wasting) this is seen mainly due to trauma to nerve and blood vessels. In case of elbow joint this may be due to sudden pressure over the brachial artery. This was seen in 3.33% cases.

*Sandhiparva Shopha* (inflammation) was seen in 33.33% cases. Trauma to inner region of joint i.e; articular bony injury, injury to synovial membrane, bursa injury etc.may cause this symptom.

*Khanjata* (proceed with difficulty) was found in 0% of the cases.

When the above Lakashanaare present in patient, obviously, Balakshaya and Cheshata-kshaya Lakshana (Functional deformity) was found in maximum patients.

Functional deformity mainly examined by naked eye, with the help of Goniometer, Oxford pain chart proved statistically significant. (p<0.05)

Out of five structural components constituting Marma, ‘Sandhi’ structure *viddhata*(trauma) is more common at the site of *Koorpara Marma* due to which functional deformity is seen.

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2. Sushrutacharya, Ed. Kaviraj Ambikadutta Shastri, Sushruta Samhita; Chaukhamba Sanskrit Sansthan ,Varanasi.(2005), Sharirsthana page no.58
4. Sushrutacharya,. Ed. Kaviraj Ambikadutta Shastri, Sushruta Samhita; Chaukhamba

Similarly, supracondylar fracture was seen in 33.33% of cases.

Mostly in the Accidental Trauma when angle of Flexion is 100\(^0\) then approximately 15\(^0\)extension is seen. When angle of Flexion is 120\(^0\) then approximately 10\(^0\)extension is seen. When angle of Flexion is 130\(^0\) then approximately 5\(^0\)extension is seen.

**CONCLUSION**

1. Accidental trauma to *Koorpara Marma* leads to Functional deformity at the site of Elbow joint.
2. *Balakshaya and Cheshata-kshaya Lakshana* (Functional deformity) was found in maximum patients.
3. Functional deformity mainly examined by naked eye, with the help of Goniometer, Oxford pain chart proved statistically significant. (p<0.05)
4. Out of five structural components constituting *Marma*, ‘Sandhi’ structure *viddhata*(trauma) is more common at the site of *Koorpara Marma* due to which functional deformity is seen.
Sanskrit Sansthan, Varanasi. (2005), Sharirsthana page no.53

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