INTRODUCTION
The brachial plexus lies in the posterior triangle of neck and axilla. It is formed by the union of ventral primary rami of lower four cervical i.e., C5, C6, C7, C8 and first thoracic i.e., T1 spinal nerve.

The formation of brachial plexus as described in standard books (grays anatomy 41st edition) is as follows –
- The brachial plexus is formed by the union of ventral primary rami of C5, C6, C7, C8 & T1 spinal nerve.
- The rami enters into the posterior triangle of neck between scalene anterior and scalene medius muscles ; divisions are located behind the clavicle, cords and branches are situated in the axilla.
- Trunks of brachial plexus-
  - The upper trunk is formed by the union of C5 & C6. The middle trunk is formed by the continuation of ventral primary rami of C7 spinal nerve. The lower trunk is formed by the union of ventral primary rami of C8 & T1 spinal nerve.
- Divisions of brachial plexus-
  - Each trunk of brachial plexus is divides into anterior and posterior divisions.
- Formation of cords of brachial plexus-
  - The anterior division of upper and middle trunks unite to form lateral cord of brachial plexus. The anterior division of lower trunk continues as the medial cord of brachial plexus. The posterior division of all the three trunks unite to form the posterior cord of brachial plexus.

Branches of brachial plexus (Table: 1)-

<table>
<thead>
<tr>
<th>Cords</th>
<th>Nerves</th>
<th>Root value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior cord</td>
<td>1. Upper subscapular nerve</td>
<td>C5, C6</td>
</tr>
<tr>
<td></td>
<td>2. Lower subscapular nerve</td>
<td>C6, C7, C8</td>
</tr>
<tr>
<td></td>
<td>3. Thoracodorsal nerve</td>
<td>C5, C6, C7, C8, T1</td>
</tr>
<tr>
<td></td>
<td>4. Radial nerve</td>
<td>C5, C6, C7, C8</td>
</tr>
<tr>
<td></td>
<td>5. Axillary nerve</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td>Lateral cord</td>
<td>1. Lateral pectoral nerve</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td></td>
<td>2. Lateral root of median nerve</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td></td>
<td>3. Musculocutaneous nerve</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td>Medial cord</td>
<td>1. Medial pectoral nerve</td>
<td>C8, T1</td>
</tr>
<tr>
<td></td>
<td>2. Medial cutaneous nerve of arm</td>
<td>C8, T1</td>
</tr>
<tr>
<td></td>
<td>3. Medial cutaneous nerve of forearm</td>
<td>C8, T1</td>
</tr>
<tr>
<td></td>
<td>4. Medial root of median nerve</td>
<td>C7, C8, T1</td>
</tr>
<tr>
<td></td>
<td>5. Ulnar nerve</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td>From upper trunk</td>
<td>1. Suprascapular nerve</td>
<td>C5, C6</td>
</tr>
<tr>
<td></td>
<td>2. Nerve to subclavius</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td>From roots</td>
<td>1. Long thoracic nerve</td>
<td>C5, C6, C7</td>
</tr>
<tr>
<td></td>
<td>2. Dorsal scapular nerve</td>
<td>C5, C6</td>
</tr>
</tbody>
</table>

The variational pattern of brachial plexus have been reported earlier, some of which are –
- Pre-fixed type of brachial plexus – When the ventral rami of C4 spinal nerve joins with the upper trunk (C5-C6), this is called pre-fixed type of brachial plexus.
- Post-fixed type of brachial plexus – When the ventral rami of T2 spinal nerve also joins with the lower trunk (C8-T1), that condition is known as post-fixed type of brachial plexus.

These variations of brachial plexus can be explained by embryological basis – The upper limb buds lies opposite to lower five cervical and upper two thoracic, as soon as the buds form ventral primary rami of these spinal nerve penetrate into mesenchyme of limb buds. The nerves then

ABSTRACT
Background: The brachial plexus has a complex anatomical structure since its origin in the neck throughout its course in the axillary region. The knowledge of variations in the brachial plexus is helpful to perform neck dissections and other surgical operation of axilla and upper arm. Thus, the comprehension of variation in the formation and branching pattern of brachial plexus is key to anatomists, radiologists, surgeons, and the anaesthesiologists. So, the present study tries to explain variations of brachial plexus.

Objective: To observe the different variation in the formation and branching pattern of brachial plexus and correlating them with surgical & clinical importance.

Material and Methods: The study was conducted on 50 brachial plexus (25 on right and 25 on left) in 25 embalmed human cadavers of unknown age from the department of anatomy of Mahatma Gandhi medical college, Jaipur. The Brachial Plexus was dissected in embalmed cadavers and exposed according to Cunningham’s Manual of Practical Anatomy by the help of dissecting instruments (scalpel, scalpel blade, blunt scissors, pointed scissors, blunt forceps, and pointed forceps).

Results: we have found the lower trunk is formed by the continuation of T1 spinal nerve in one cadaver; 3 out of 50 (6%) were found pre-fixed type of Brachial Plexus; Dorsal scapular nerve was originated from C4 spinal nerve bilaterally in one cadaver and unilaterally from left side in one cadaver and Communication of median and musculocutaneous nerve was found in 12% cases in right side & 8% cases in left side.

Conclusion: In the present study an attempt has made to know the possible variations in the formation and branching pattern of the brachial plexus. Though the variations mentioned in the present study may not alter the normal functioning of the limbs of individuals but the knowledge of variations is to be kept in mind by anatomists, radiologists, surgeons, neurologist, orthopedician and anaesthesiologist.
develop with differentiating mesodermal and muscle cells, so any misexpression of these factors lead to abnormality in the formation and distribution of the particular nerve of the 'brachial plexus'.

The knowledge of variation in the brachial plexus are helpful to redical neck dissections and other surgical operation of axilla and upper arm.

Thus, the comprehension of variation in the formation and branching pattern of brachial plexus is key to anatomists, radiologists, surgeons, and the anaesthesiologists. So, the present study tries to explain variations of brachial plexus.

Material and Methods
The study was conducted on 50 brachial plexus (25 on right and 25 on left) in 25 embalmed human cadavers of unknown age and sex from the department of anatomy of Mahatma Gandhi medical college, Jaipur.

Institute Ethics Committee approval was obtained before the start of the study.

The Brachial Plexus was dissected in embalmed cadavers and exposed according to Cunningham’s Manual of Practical Anatomy by the help of dissecting instruments (scalpel, scalpel blade, blunt scissors, pointed scissors, blunt forceps, and pointed forceps). All the roots, trunks, divisions, cords, and branches of brachial plexus will be dissected and cleaned.

The following parameters were observed and tabulated:
1. Type of plexus – Normal, Pre-fixed, Post-fixed.
2. Variations at the level of roots, trunk, division, cords and branches of brachial plexus.
3. Any accessory nerve present: their origin and course.

RESULT
The observation of variations in root, trunk, division, cords and branches of brachial plexus are as follows-

Variations in trunk (Table:2)·

<table>
<thead>
<tr>
<th>Trunk</th>
<th>Total no. of specimens</th>
<th>Normal origin from</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper trunk</td>
<td>50</td>
<td>C5, C6</td>
<td>Nil</td>
</tr>
<tr>
<td>Middle trunk</td>
<td>50</td>
<td>C7</td>
<td>1</td>
</tr>
<tr>
<td>Lower trunk</td>
<td>50</td>
<td>C8, T1</td>
<td>Nil</td>
</tr>
</tbody>
</table>

(1) Usually middle trunk of brachial plexus is formed by the continuation of C7 spinal nerve but in one case we observed that the middle trunk is formed by the union of C7 & C8 spinal nerves.
(2) In one cadaver the lower trunk is formed by the continuation of T1 spinal nerve. Normally it is formed by the union of C8 & T1 spinal nerve.

| Type of plexus (table: 3) |

<table>
<thead>
<tr>
<th>Brachial plexus</th>
<th>Number of plexus</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-fixed</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>23</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Post-fixed</td>
<td>Nil</td>
<td>Nil</td>
<td></td>
</tr>
</tbody>
</table>

(3) 47 out of 50 (94%) Brachial Plexus dissected were normal regarding origin of nerves.
(4) 3 out of 50 (6%) were pre-fixed Brachial Plexus. Three brachial plexuses were found unilaterally pre-fixed (one on left side and two on right side). There were no any bilaterally pre-fixed brachial plexus found during present study.
(5) There was no post-fixed plexus found during present study.

3. Communication between median and musculocutaneous nerve (Table:4)·

<table>
<thead>
<tr>
<th>Communication between median and musculocutaneous nerve</th>
<th>Present</th>
<th>Absent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>Left</td>
<td>Right</td>
<td>Left</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>22</td>
<td>23</td>
</tr>
</tbody>
</table>

SUMMARY AND CONCLUSION
The present study was conducted on 25 embalmed human cadavers to study the formation and branching pattern of brachial plexus. In the present study an attempt has made to know the possible variations in the formation and branching pattern of the brachial plexus. Though the variations mentioned in the present study may not alter the normal...
functioning of the limbs of individuals but the knowledge of variations is to be kept in mind by anatomists, radiologists, surgeons, neurologist, orthopedician and anaesthesiologist. The knowledge of variations is essential to medical practitioners in dealing with surgery around axilla in order to prevent post-operative complications.

REFERENCES