2. anterior border of sternocleidomastoid muscle notch. 3 more incisions
incision is made on the neck from the symphysis menti to the sternal
under the back of the head to raise it to a convenient position. A median
The cadaver was placed in supine position and a block was placed
Methodology
INSTITUTIONAL ETHICS COMMITTEE.
was done as a cross – sectional study after getting clearance from the
MATERIALS AND METHODS
5. In embalming using common carotid artery.
3. Preoperative selective arterial angiograms to map out the
2. Plastic and reconstructive surgeries of the head, neck and face
1. Surgeries– thyroidectomy, laryngectomy, faciomaxillary
2. Length of right and left common carotid arteries.
1. Origin of common carotid artery.
2. Length of right and left common carotid arteries.
3. Level of bifurcation of common carotid artery.
5. Relation of external carotid artery to the internal carotid artery.

RESULTS
Each of the following parameters was observed in the 100 hemi-necks.

1. Origin of common carotid artery.
2. Length of right and left common carotid arteries.
3. Level of bifurcation of common carotid artery.

INTRODUCTION
The common carotid artery, the external carotid artery and internal
carotid artery are the major source of blood to the head and neck. In
head and neck surgery, the common carotid arteries are important
landmarks, defining the plane of dissection during radical neck
surgeries. Clinical diagnosis and surgical procedures require a
thorough knowledge of these arteries as well as their variations. Recent
and continuing advances in surgical procedures have made the need for
such detailed knowledge more important.

Accurate evaluation of the carotid bifurcation level with non-invasive
techniques remains an important goal and external anatomical
landmarks can be useful in predicting the bifurcation level of the
carotid artery.

Anatomical knowledge of variations in the origin of common carotid
artery and variations in the branching pattern of the external carotid
artery will also be useful in situations like:-

1. Surgeries– thyroidectomy, laryngectomy, faciomaxillary
   surgeries, tonsillectomy, glossectomy and other neck surgeries.
2. Plastic and reconstructive surgeries of the head, neck and face
   which depend on the external carotid artery for their supply.
3. Preoperative selective arterial angiograms to map out the
   vascularity and the true extent of the junctions of the head, neck and
   face.
4. Selective arterial embolization to reduce the vascularity of the
   junctions of the head, neck and face.
5. In embalming using common carotid artery.

MATERIALS AND METHODS
The material consisted of 100 hemi-necks (30 formalin fixed cadavers
adult and 20 foetuses) available in the department of Anatomy,
GOVERNMENT MEDICAL COLLEGE, KOZHIKODE. This study
was done as a cross – sectional study after getting clearance from the
INSTITUTIONAL ETHICS COMMITTEE.

Methodology
The cadaver was placed in supine position and a block was placed
under the back of the head to raise it to a convenient position. A median
incision is made on the neck from the symphysis menti to the sternum
and 4.5 cm with an average of 3.34 cm.
In foetus, the length ranged between 1 cm and 3.5 cm with an average
9.4cm, and the left had 13.8 cm in adults. In previous literatures in
the previous studies, the right common carotid had an average length
9.4cm, and the left had 13.8 cm in adults. In previous literatures in
9.43 cm on the right. On the left, the length ranged between 10.5 cm and 13 cm with an average of 11.98 cm.

further down the neck the common carotid artery is traced by cutting
the medial half of the clavicle to see the origin. On the left side, the
origin of common carotid was traced in the mediastinum at the arch of
aorta. On the right side, the origin of the common carotid was traced in
the lower part of neck coming from brachiocephalic trunk.

Further down the neck the common carotid artery is traced by cutting
the medial half of the clavicle to see the origin. On the left side, the
origin of common carotid was traced in the mediastinum at the arch of
aorta. On the right side, the origin of the common carotid was traced in
the lower part of neck coming from brachiocephalic trunk.

Conclusion: These vessels show variability and a thorough anatomical knowledge about these vessels would be of help during head and neck
surgeries and also during radiological examination.

KEYWORDS :
the upper border of thyroid cartilage in 66.7%, above the thyroid cartilage in 3.3% and below the thyroid cartilage in 30%.

In foetus, the common carotid artery bifurcates at the upper border of thyroid cartilage in 60%, above thyroid cartilage in 12.5% and below thyroid cartilage in 27.5%.

Variations in branching pattern of external carotid artery
Anterior branches
Superior thyroid artery
In one case (both right and left), the superior thyroid took origin from common carotid artery (fig1). In another case it took origin from external carotid artery (fig2). No variations were noted in foetus group.

Variations in the bifurcation of common carotid artery

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Population</th>
<th>Size</th>
<th>Thyroid cartilage</th>
<th>Hyoid bone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lo (2006)</td>
<td>New Zealand</td>
<td>36</td>
<td>39%</td>
<td>40%</td>
</tr>
</tbody>
</table>

In foetus, the average length of right common carotid was 2.27 cm and that of left common carotid is 3.34 cm. The average length of left common carotid artery falls under normal range (Spinziad, 2008).

DISCUSSION
Variations in the origin of common carotid artery
The developmental anomalies in the aortic arch's branching pattern and carotid systems arise from the unusual patterns of development of the embryonic aortic arch system of pharyngeal arches, so that there may be persistence of the aortic arches that normally disappear or disappearance of the parts that normally persist.

A study which was done by Nayak et al. in 2006 reported the classical branching pattern of the aortic arch in 91.4% cases and variations were found in six cadavers (9.6%); 4.8% presented common origin of the carotid arteries; 1.6% had bi-innominate sequence, and the same specimen had left coronary artery arising from arch of aorta directly; 1.6% presented right subclavian artery arising directly from the aorta; 1.6% had left vertebral artery a branch of aortic arch.

In the present study, the origins of right and left common arteries showed no variations both in adults and foetus.

Relation of external carotid artery to internal carotid artery
In adults and foetus, in 93% the external carotid artery was lying anteromedial to internal carotid artery and in 7% the external carotid artery was lying anterolateral to internal carotid artery.
The present study is a cadaveric study of the origin of common carotid arteries and branching pattern of external carotid artery in 100 hemi-necks.

The findings observed in the present study can be summarized as follows:

1. The right common carotid originated from brachiocephalic trunk and left common carotid originated from the arch of aorta in all cases.
2. The right and left common carotid arteries showed variable lengths.
3. The common carotid artery bifurcation was observed in different levels, from upper border of thyroid cartilage, above and below the thyroid cartilage which means that the origin of external carotid artery was variable in many cases.
4. The superior thyroid artery had variable origin. 2% arose from the common carotid artery, 37% from the external carotid artery. Most commonly it arose from the common carotid artery bifurcation (61%).
5. In 92% of cases, the branching pattern of external carotid artery was normal. In 6% cases, lingualofacial trunk was observed and in 2% cases the superior thyroid artery originated from the common carotid artery.

It can thus be concluded that these vessels show variability and a better anatomical knowledge about these vessels would be of help during head and neck surgeries and also during the interpretation of angiograms by radiologist.

References: