MORPHOLOGICAL AND MORPHOMETRIC STUDY OF FOETAL THYROID GLAND AT DIFFERENT GESTATIONAL AGE.

INTRODUCTION:
The thyroid gland is the first endocrine gland to get differentiated and start functioning as early as 11th week. The word "Thyroid" is Greek and is loosely translated to mean shield gland. The organogenesis of thyroid gland begins when the median endodermal cells start getting thick and forms a diverticulum in the primitive pharynx floor which ultimately descends at 7 weeks of pregnancy at the level of cervical spine. A pyramidal lobe which is mostly conical often ascends towards the hyoid bone from isthmus or adjacent part of either lobe. A fibromuscular tissue often connects this pyramidal lobe to the hyoid bone and is called levator glandulae thyroideae. Accessory thyroid glands are sometimes found as small detached masses of thyroid tissue in the vicinity of the lobes or above the isthmus and certain findings like the level of thyroid gland, presence or absence of isthmus in relation to the tracheal rings were noted accordingly. In 14% cases, pyramidal lobe along with levator glandulae thyroideae (LGT) was noted whereas in 12% cases there was agenesis of isthmus.

AIMS & OBJECTIVE
The study was conducted with the following aims and objectives.
1. To measure the different dimensions of foetal thyroid gland.
2. To study the morphology of foetal thyroid gland and its variations, if any.

MATERIAL & METHODS
Fifty intact foetuses of different gestational ages ranging from 10-36 weeks procured from the Department of Anatomy, Government Medical College and Hospital, Chandigarh - 32 were studied in the Department of Anatomy, Government Medical College and Hospital -32 Chandigarh. After preserving in 10% formalin, midline incision was made at the level of cervical spine. The甲状腺s were found to be related with 1-6 tracheal rings in all the foetuses. They were butterfly shaped in almost all the body cells that is optimal for their normal function. The importance of thyroid gland is to promote growth and development of the brain during foetal life and for the first few years of postnatal life. Iodine deficiency is the single most common cause of preventable mental retardation and brain damage in the world.

Many authors have described the existence of variations of thyroid gland like the pyramidal lobe, levator glandulae thyroideae, accessory thyroid and the agenesis of isthmus in adult thyroid gland but the incidence of development of such unusual thyroid variations in foetuses should be as well known to all interventionists irrespective of whether they are surgeons, radiologists or pathologists.

RESULTS: The thyroid gland was found to be related with 1-50 and were grouped as 10-18 weeks, 19-27 weeks and 28-36 weeks. The mean dimensions of length, breadth and width of both right and left lobes were noted accordingly. In 14% cases, pyramidal lobe along with levator glandulae thyroideae (LGT) was noted whereas in 12% cases there was agenesis of isthmus.

Figure No.1
Diagram showing the length and breadth of the lobes and the Isthmus and various planes

L1: Length of lobe
L2: Length of isthmus
B1: Breadth of lobe
B2: Breadth of isthmus
The pyramidal lobe which was found in 14% of cases mostly represents the development of glandular tissue from the caudal end of thyroglossal duct. These lobes could be the source of pitfalls in surgery as their preoperative diagnosis is very difficult in end of thyroglossal duct. These lobes are often associated with absence of either of one lobe or presence of ectopic thyroid tissue. While preparing for thyroidectomy one should be prepared to find replacement of the pyramidal lobe. Also sometimes called Lobouettes lobe, during thyroid surgeries can lead to serious complications specially in carcinomas and Graves disease.

DISCUSSION:
The thyroid gland well known for its variations like agenesis of isthmus, persistent pyramidal lobe, levator glandulae thyroideae, lingual thyroid etc. are well studied by many authors. Harjeet et al observed different shapes of thyroid gland as horse-shoe shaped (36.8%) irregular shaped (5%) and with two separate lobe (7.9%). The incidence of agenesis of isthmus was reported as 2.5% according to Anupriya and Kalpana. Agenesis of isthmus is often associated with absence of either of one lobe or presence of ectopic thyroid tissue and hence when such a condition is diagnosed radiologically, differential diagnosis such as autonomous thyroid nodule or thyroiditis should be kept in mind. While preparing for thyroidectomy one should be prepared to find such variations and the dissection should be precise as important nerves and vessels lie in its vicinity. The reason for two separate lobes is attributed to a high division of thyroglossal duct which can meet these needs and to establish a baseline data for the incidence of these variations are often overlooked during these procedures and important for the surgeons, radiologists and interventionists as these variations are often overlooked during these procedures and should be dealt cautiously. Thus the above study is an attempt to meet these needs and to establish a baseline data for the incidence of these variations.

According to Standring, the LGT extends from the pyramidal lobe or upper border of isthmus below upto the hyoid bone above and that too usually on the left side. In the present study, we encountered that all the PL to be associated with LGT which were extending upto the hyoid bone. Many authors have described this muscle to be either fibrous, muscular or fibromuscular. Godart reported such a muscle on the basis of nitric oxide test as muscular. According to Hamilton and Mossman it is fibrous or muscular extending upto the hyoid bone. Many authors have described this muscle to be either fibrous, muscular or fibromuscular.

### Table 2. Showing incidence of agenesis of isthmus.

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### Table 3. Showing the incidence of Pyramidal Lobe

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Conclusion: The present study tries to highlight the various developmental anomalies of thyroid gland at different gestational age. It also depicts how the dimensions increase with increase in gestational age. The knowledge of incidence of agenesis of isthmus, pyramidal lobe and levator glandulae thyroideae is important for the surgeons, radiologists and interventionists as these variations are often overlooked during these procedures and should be dealt cautiously. Thus the above study is an attempt to meet these needs and to establish a baseline data for the incidence of these variations.
FIGURE 6 SHOWING INCREASE IN DIFFERENT MEAN DIMENSIONS (mm) OF THYROID GLAND AGAINST INCREASING GESTATIONAL AGE 1(10-18WEEKS),2(19-27WEEKS) AND 3(28-36WEEKS).

REFERENCES: