The present study has been conducted on 60 to 320 C.R. length foetuses to find out histopathological changes in the foetal suprarenal gland. No remarkable changes were noticed between either sex as well as in left and right suprarenal gland in approximately corresponding series of foetuses. The weight of suprarenal glands in both the series was less than 1 gm unto 160 C.R. length, were after gradually increasing to approximately 3 gms to 320 gms C.R. length.

This appears that after 160 mm the foetal suprarenal gland must have started functioning in relation to the response of foetal pituitary gland. This might have caused drastic changes in increased number of cells and in their regional distribution. In the past, various disciprions have been given regarding the pituitary-adrenal axis and its effect on reproductive life of an individual (Lanman 1960, Bearn 1968).

Lanman (1961) suggested that human chorionic gonadotropin secreted by placenta may play some part in release of ACTH by impairing foetal adrenal biogenesis or by accelerating the degradation of the foetal corticoids. At various C.R. lengths in the foetus of
both the sexes, gradual pattern of increasing height and width were noticed in correlation with gestation period. This indicates that increased cellular architecture of suprarenal gland must have shown the changes in its morphological features. Available literature on this subject does provide much information regarding height, width and thickness of the suprarenal gland (Mitchell and Weil 1953, Jost 1975). The weight of the suprarenal gland during foetal life has been considered as an important factor in assessing the duration of gestation. A relationship exists between the adrenal and foetal weight (Anderson et al, 1971). Thus it may be pointed out that prolongation of pregnancy observed among infants with smaller adrenals and at the same time with smaller body weight may be due to a lower metabolic demand of such foetuses when compared with foetus of large body and adrenal weight (Adderson et al 1971). However, in the present study the weight of the foetuses were not recorded because the foetuses showing gross malformations etc were discarded.

Histological studies of adrenal gland have been considerably described in the past (Oliver and Schafer 1964, Keen et al 1977, Colick et al 1935). Authors tried to differentiate the various zones of the cortex and
medulla and described the cell morphology. Even distribution of vit. 'E' in various zones of both adrenal gland was studied at various developmental stages (Glick et al 1935). The involution of adrenal gland during foetal period accounts for a major change in the functional activities of individual which was well described by Sonner (1940).

At 80 mm C.F. length the adrenal gland revealed a well defined capsule with fibroelastic architecture showing blood vessels, ganglion cells and nerve fibers. At 90 mm C.F. length the suprarenal gland also presented wavy nature of capsule. Available literature does not document the wavy nature of the capsule of the developing adrenal gland. This might have been as a result of elastic tissue activity after the expulsion of cellular elements of the capsule towards the sub capsular region.

The thickness of pericapsular tissue of adrenal gland was seen gradually increasing with increasing gestation period and finally in the full term foetuses well formed fat laden tissue was noticed in the peri-capsular region. The chromaffin cells were also located along with arrested cortex in the capsule of the suprarenal gland and got localized in the capsule itself and was noticed upto 240 mm stage.
Jayne (1953) observed the similar findings of fibro cellular capsule and reported that as age advances the capsule showed gradual increase in thickness and assumed a more hyaline and fibrous appearance. This observation was recorded in 17 days rat foetuses.

Presence of ectopic cortical tissue in the capsular region, which was even observed upto 240 mm C. stage, clearly documents that it was localized in way of migrating towards subcapsular region to finally increase the cellular element of the cortex was also reported by Arey, L. (1966). The multiple primordia or secondarily separated portions of the parent gland frequently from accessory suprarenal as a rule, such accessory gland are composed of cortical substance only. They may be located in the region of the suprarenals and kidneys, in the retroperitoneal tissue below the kidneys or in relation to the gonads. Jayne (1953) writes that capsular cells are added to the glomerulosa by apposition of new layers of the cells. However, he did not notice ectopic cortical tissue in the capsular region. Coupland (1952) revealed the origin of chromaffin cells and considered that in mass adrenal medulla and extra adrenal chromaffin tissue in human foetuses develop from sympathetic element. The presence of chromaffin cells in
the capsular region of the developing adrenal gland in present study further substanti to its migrating nature because it was cortex seen in capsule before being poured into the medulla.

The present study demonstrates that provisional cortex was initially occupying 3/5th area of the cortex presenting sufficient amount of chromaffin cells which later on during subsequent stages were observed migrating towards the medulla.

Histological studies further document that focal necrosis started appearing from 120 mm C.R. length and were continued upto 240 mm C.R. length. The evidence of haemorrhage in the area of focal necrosis as it was earlier reported could not be observed in any of the series of specimens. Cramer and Harming (1937) also discovered the brown degeneration appeared to consist of necrotic mass separating the cortical and medullary area in mice. Swinyard (1943) observed that foetal cortex grew very rapidly during the last trimester of prenatal life and at birth constituted 85.1% of the cortex. Present study depicts that height of the foetal cortex gradually decreased from 80 mm in way of being further replaced by the permanent cortex.
At 125 mm C.R. length, an unusual feature was noticed where a reticular tissue containing circular structure was seen surrounded by the chromaffin cells. This could be considered as a sign of degeneration in chromaffin like tissue. However, such feature of degeneration has not been reported in available literature.

Differentiation of the medullary zone was not well established even at 90 mm C.R. length stage. Similar finding was also reported by Lamm et al (1960). The medullary zone was consisting of sinusoidal network with acidophils like cells, showing both vacuolated and non vacuolated cytoplasm. The granular and non granular cytoplasm certainly denotes the functional activity. The chromaffin cells were although noticed at 80 mm C.R. length, they were diffusely placed in medulla from 110 mm C.R. length onward. Coupland (1965) observed the nature of chromaffin cells of rat adrenal medulla. He described that granular substance of chromaffin cells appeared to be accumulated initially in the membrane of golgi zone and was finally extruded from the cell surface. However, he did not describe the nature of chromaffin cells in human foetuses at various developmental stages.
The myelinated and unmyelinated nerve fibres have also been reported in the adrenal medulla by many workers. This could not be observed in the present study because neurohistological techniques were not utilized. Al-lami (1970) observed the medulla of golden hamsters. But in human adrenal medulla such arrangement and shape could not be observed during foetal period.

Fiorenza (1968) described adrenal gland of sirens lacertira and reported three types of chromaffin cells on the basis of their size, shape and ultrastructure. In the present study special stains were not used to differentiate the detailed cellular structure. However, cells appeared equal in size and shape on light microscopic study. Dobbie et al (1966) observed the longitudinal muscle bundles in veins even were seen going towards the cortical tissues. In the present study no such feature was noticed. The sinusoids were only lined by thin connective tissue covering devoid of any muscle cells.

Adrenal medulla is extremely important for the initiation of labour. It is described that catecholamine excretion of the mother particularly nor epinephrine towards the term in the medulla exerts a stimulating effect upon the myometrium for the initiation of the labour.
Histological studies of adrenal gland in present studies revealed significant information regarding the changes in the permanent cortex. The permanent cortex was initially 1 to 2 cell thickness at 80 mm C. length. It consisted of sinusoids and various groups of the cortical cells. The height of the permanent cortex further increased at 240 mm C. length to nearly 12 to 20 cell thickness. Increase in the cortical area of the permanent cortex of sur-rareal gland towards the higher gestation is suggestive of its functional role in the mechanism of initiation of labour through the foetal pituitary adrenal axis. It seems established that cortisol from the foetal adrenal serves as a link in the mechanism triggering parturition in species such as sheep and goat (Liggins et al 1973). This information substantiates the fact related to the increased thickness of permanent cortex in the present study. Raveja et al (1980) conducted a comprehensive study of foetal adrenal gland in reference to the study of betamethasone induced mid-term abortion. They postulated that stimulation of the foetal pituitary adrenal axis along with ageing of the placenta was the major factor in initiation of neuromuscular expulsion.

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