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ORIGINAL ARTICLE

OBLITERATIVE APPENDICITIS: A STUDY

K. Murali[1], K. V. Hariprasad[2], Nimmy Venu[3], J. Kabalimurthy[4], C. S. Subramanian[5], Rehana Tippoo[6], P. Viswanathan[7], B. Krishnaswamy[8]

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ABSTRACT: Obliterative appendicitis is a condition where the lumen of the appendix is filled (obliterated) with adipose tissue, neural tissue and cells of lymphoid series. Obliterative appendicitis also can present with pain and/or as a case of acute abdomen. The present study reports cases of obliterative appendicitis operated during the period from January 2013 to March 2014.
KEYWORDS: Obliterative appendicitis, Appendiceal neuroma.

INTRODUCTION: Obliterative appendicitis is the condition in which lumen of a portion or all of appendix has been fully obliterated. The process of obliteration of the lumen of the appendix occurs during all ages from five years to old age and that its activity is greatest between birth and forty years of age. Appendicitis is diagnosed clinically on a triad of pain abdomen with local guarding, leucocytosis and neutrophilia. The appendix surgically removed may harbor surprises. Often the classical picture of ulceration of mucosa, transmural inflammatory cell infiltrate composed of neutrophils, oedema, congestion and periserosal inflammations are not present in many of the cases. Instead there is :

1. Serosal vessel congestion.
2. Sub mucous lymphoid hyperplasia.
3. Dilated lumen filled with fecal material.
4. Occasionally cross section of parasite enterobius vermicularis.
5. The entire lumen is obliterated and filled with varying proportions of fibrocollagenous, neural, adipose tissue and lymphoid aggregates.
6. Rarely carcinoid.

Any intra-abdominal hollow viscus on expansion of the cavity can produce pain.

OBSERVATIONS: 366 cases of appendix were operated in Rajah Muthiah Medical College during the study period from January 2013 to March 2014-out of which 12 cases were reported as obliterative appendicitis, 183 cases were reported as acute appendicitis, 169 cases were reported as serosal congestion with sub mucosal lymphoid hyperplasia and 2 cases were reported as appendiceal carcinoid.

Total number of appendicectomy specimen – 366
Number of cases of Obliterative appendicitis -12

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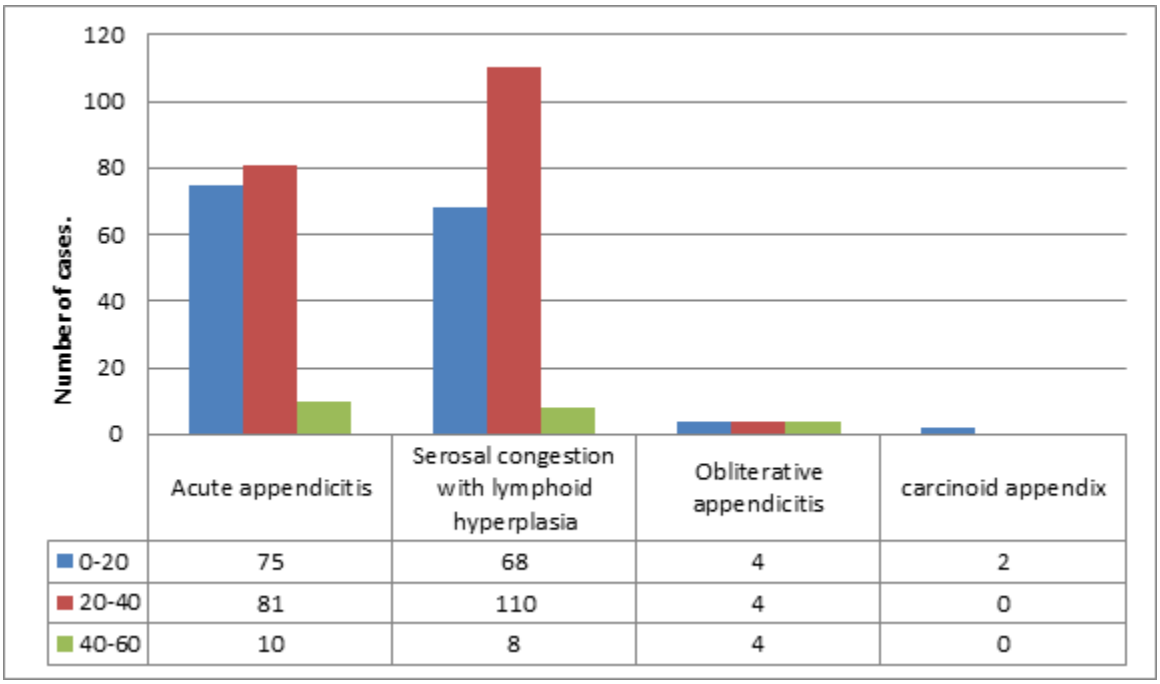
Sl. No	Diagnosis	Number
1	Obliterative Appendicitis	12
2	Acute Appendicitis	183
3	Serosal congestion + sub mucosal lymphoid hyperplasia	169
4	Carcinoid	2
	TOTAL	**366**

CASE DISTRIBUTION:



DISCUSSION: A common feature of the appendix in obliterative appendicitis is luminal obliteration by a fibrotic process that tends to start at the tip and progresses proximally to involve the entire lumen.[1, 2]

The lumen is obliterated in one of the following two ways:

1. By the pressure atrophy of the mucosa resulting from encroachment of the increasing hyaline connective tissue originating from inflammatory stimulated sub mucosal tissues and from preexisting hyaline connective or endothelial tissue elements.
2. By an additional acute inflammation which finally destroys so much of the mucosa that it cannot be regenerated by the decreased number of functioning crypts of Lieberkuhn, before adhesion to the opposite wall occurs.[3]

Various modifications of these two processes may be encountered in a large group of specimen; however the mechanism of formation of the lumen occlusion is fundamentally the same[4]. Some cases could be due to post inflammatory scarring.[5] However, most if not all examples of appendiceal luminal obliteration appears to be caused by a neurogenic occlusive proliferation called

neurogenic hyperplasia or neurogenic appendicopathy.[6,7, 8, 9] When this process obliterates the lumen, the lesion may be called an axial neuroma. Axial neuromas are associated with the loss of the normal mucosa and lymphoid tissue. Neurogenous hyperplasia may also cause intramucosal or submucosal proliferations resulting in tumor like nodules or diffuse expansion of lamina propria. These sub mucosal and intramucosal neuromas show histologic features similar to those of the more obliterative lesions.[10]

Many factors play an important role in the production of obliteration of the appendiceal lumen:

1) As various stages in mammalian development are ascended, the appendix becomes more and more a vestigial structure, which has an increasing tendency to stenosis.
2) Any process which causes a narrowing and diminishment in the lumen of the appendiceal artery causes deprivation of adequate nourishment and the stenosing process extends progressively towards base of appendix.
3) Slow and retrogressive involution of all body tissues including appendix after attaining maturity; also progressive and definite obliteration of capillary beds of all parenchymatous organs after physical maturity.
4) Human appendix is notoriously unable to cope with a mild infection due to inadequacy of the terminal blood supply.
5) The fat of the mesoappendix apparently migrates along the course of the perforating blood vessels as they ramify from the mesoappendix to the sub mucosa.
6) All structures containing excess of lymphoid tissue normally have a tendency to undergo involution after maturity has been reached.[3]

Situated in the axial region of obliterated appendices are small nodules of spindled nuclei with scant, indistinct cytoplasm that tend to aggregate in onion skin like lamellae. The cells lie in a lace-like eosinophillic pericellular material and produce a tactoid whorling pattern. These nodules may be rimed by denser connective tissue, a feature better highlighted by the Masson trichrome stain. These nodules are thought to arise from pericellular mucosal nerve plexuses, possibly owing to stimulation by argentaffin cells that had migrated from the crypts of Lieberkuhn. Most often these nodules are not grossly evident, but on occasion large ganglioneuromatous nodules may be grossly visible.[11] These tend to involve Meissner and Auerbach plexuses and may extend to the periappendiceal fat. A syndrome of chronic recurrent right lower quadrant pain without evidence of peritoneal irritation is reported in some of these patients, and appendicectomy apparently relieves the symptoms.[12] It has been suggested that the neuroendocrine proliferation in neurogenic appendicopathy could be a cause of appendiceal pain, thus producing symptoms mimicking appendicitis[7]. However, luminal obliteration is encountered in incidental appendicectomy specimens more often than in appendixes removed from patients with symptoms of appendicitis,[13] and it is a common finding in appendixes at autopsy.[1, 8]

CONCLUSIONS: From this study it is found that apart from the usual cases of acute appendicitis, the appendix can also harbor some histological curiosity where the lumen can be filled with adipose tissue, fibro fatty tissue, neural tissue, lymphoid aggregate. Carcinoid tumor can also obliterate the lumen.

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MICROSCOPIC PICTURES:

The various illustrate depicts different proportions of the tissue that fills the lumen:

PLATE -1:

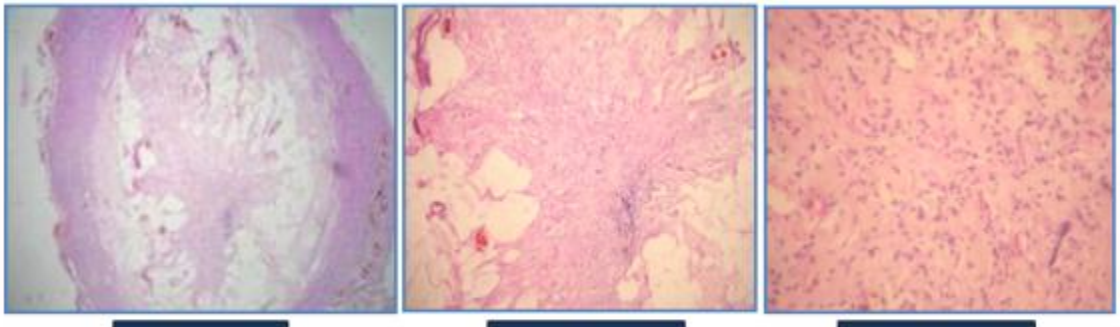

Fig. 1: 4x Fig. 2: 10x Fig. 3: 40x

Lumen of the appendix is obliterated with adipose tissue, fibrocollagenous tissue, neural tissue and lymphoid tissue along with congested blood vessels.

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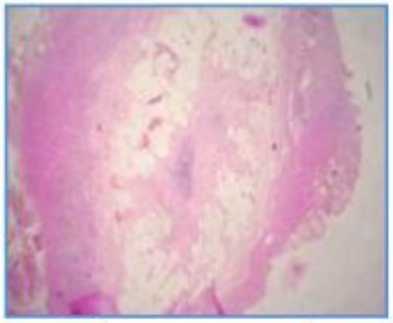

Fig. 4: 4x

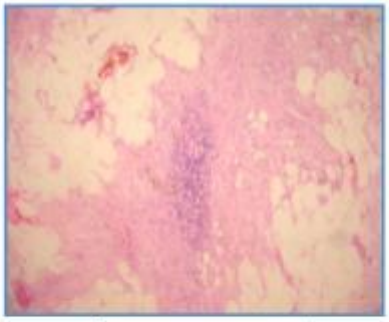

Fig. 5: 10x

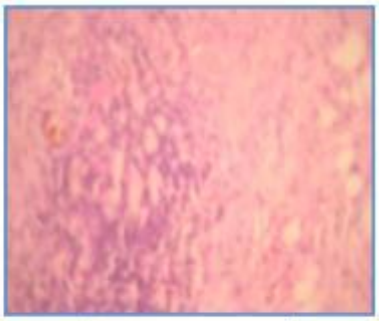

Fig. 6: 40x

Lumen is obliterated with adipose tissue, fibrocollagen, neural tissue and lymphoid tissue.

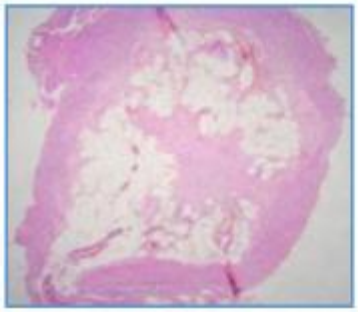

Fig. 7: 4x

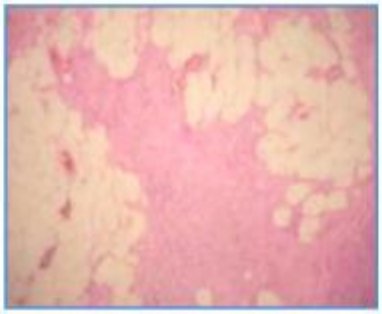

Fig. 8:10x

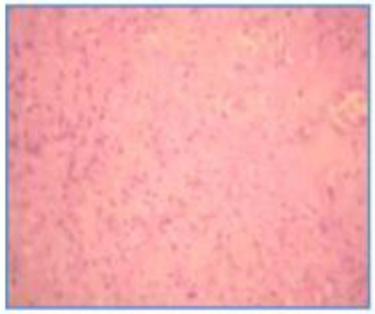

Fig. 9: 40x

Lumen is obliterated with adipose tissue, fibro collagen and neural tissue.

PLATE-2:

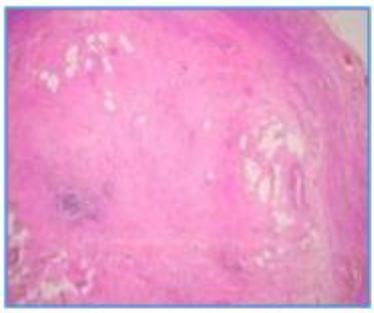

Fig. 10: 4x

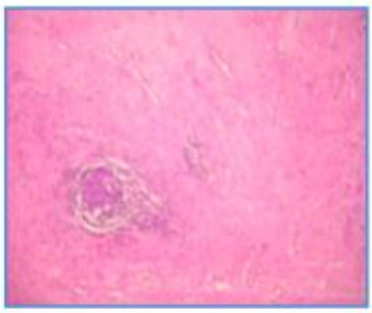

Fig. 11: 10x

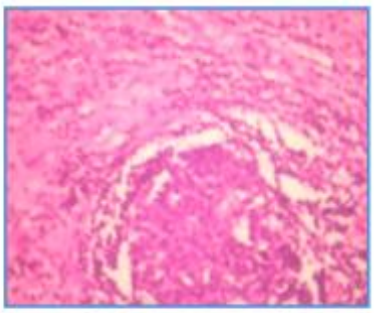

Fig. 12: 40x

Lumen is obliterated with fibro- collagen and lymphoid tissue.

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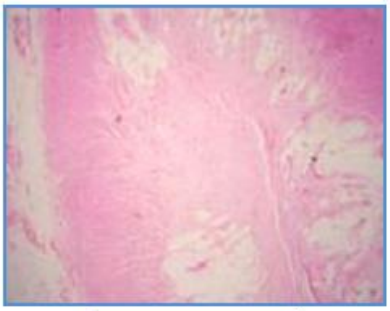

Fig. 13: 4x

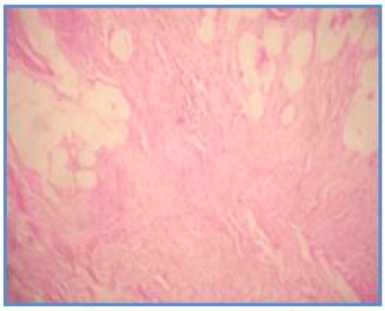

Fig. 14: 10x

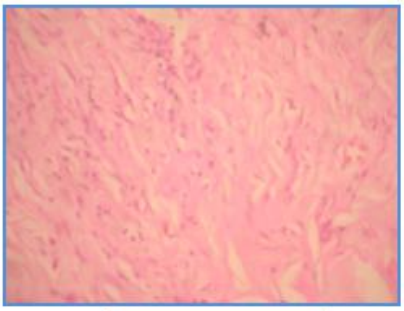

Fig. 15: 40x

Lumen is obliterated with adipose tissue, fibro- collagen and neural tissue.

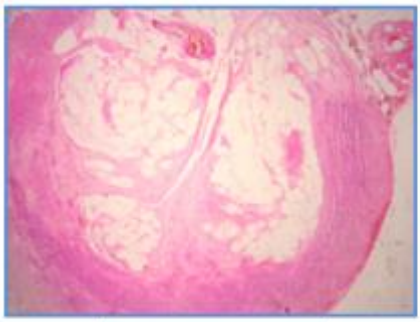

Fig. 16: 4x

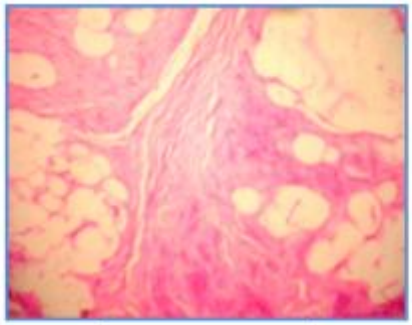

Fig. 17: 10x

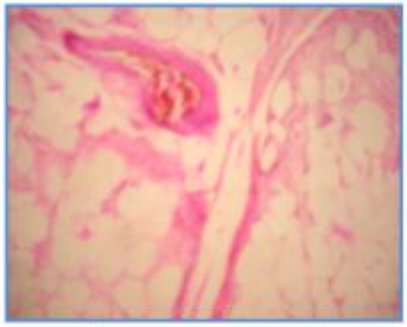

Fig. 18: 40x

Lumen of the appendix is obliterated with adipose tissue and fibrocollagenous tissue with congested blood vessels.

CARCINOID OF APPENDIX:

PLATE-3:

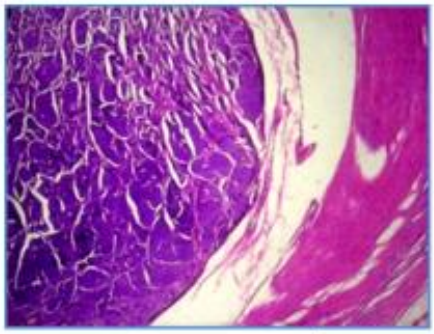

Fig. 19: 10x

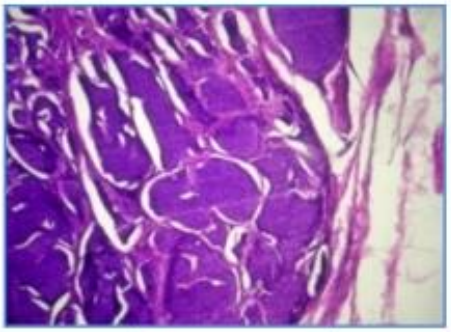

Fig. 20: 20x

Lumen is filled with carcinoid tumor nodules.

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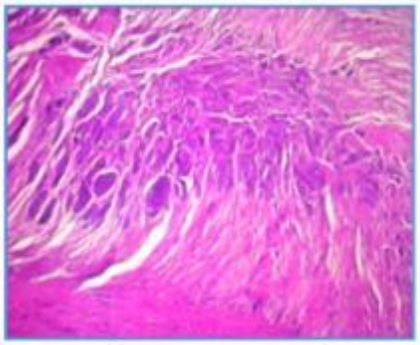

Fig. 21: 10x

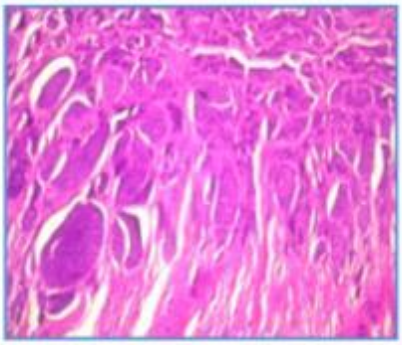

Fig. 22: 20x

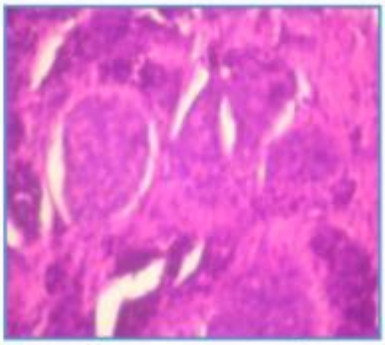

Fig. 23: 40x

Tumor cells are small, round and darkly stained.

PLATE- 4:

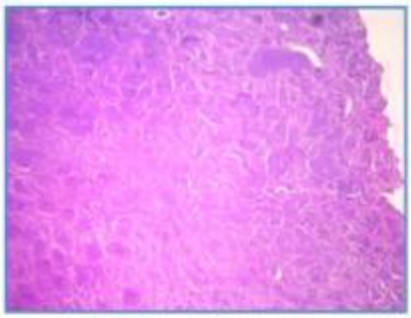

Fig. 24: 4x

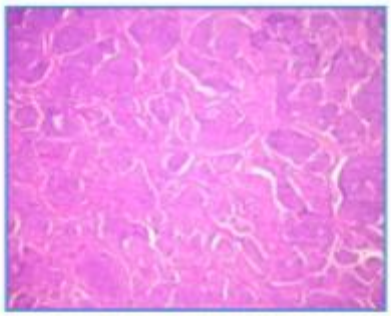

Fig. 25: 10x

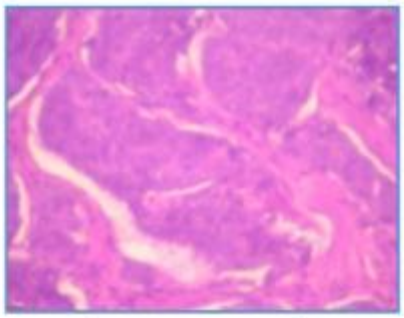

Fig. 26: 40x

Entire appendix replaced with carcinoid tumor.

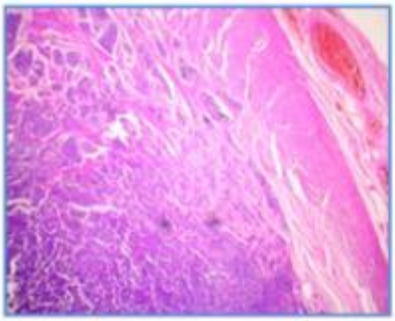

Fig. 27: 4x

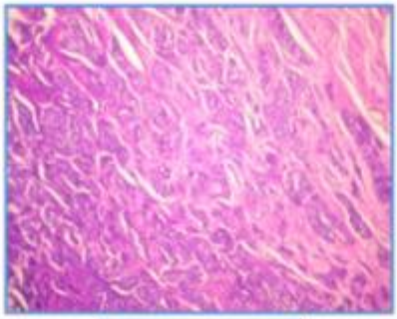

Fig. 28: 10x

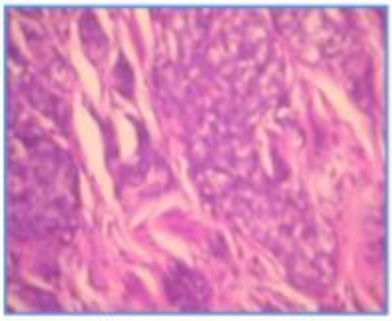

Fig. 29: 40x

Appendix wall contain carcinoid tumor nodule.

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