INTRODUCTION
Though cold has been used to destroy tissue since 1899, it was used for treatment of Haemorrhoids only in 1969 (Lewis).

Very rapid freezing of piles is done with Nitrogen Oxide (-90° C) or Carbon Dioxide (-68° C) or with liquid nitrogen (-198° C) followed by very rapid woming. Freezing produce fine crystals in intra and extra cellular water and thrombosis in capillaries, arteries, venis and lymphatics. Freezing also affects sensory nerve fibres which explains why cryotherapy does not cause pain. Haemorrhoids are one of the common surgical diseases afflicting mankind since time immemorial. The exact incidence of Haemorrhoids in general population is not known, probably 50% (Goligher J.C.) Many patients remain asymptomatic or may not seek advice.

Haemorrhoid word is derived from Greek adjective HAEMORRHOIDS means bleeding (Haima = Blood, Rhoos = Flowing)

Hippocrates used this name in 5th century B.C. in India (Fila = A ball) from which the name piles is derived.

The severity of symptoms has no constant relationship to the degree of Haemorrhoids and hence some patients with severe symptoms have minor degree of haemorrhoids.
It is therefore a co-relative analysis of the subjective assessment rather than the objective finding which is considered for efficiency of a particular method of treatment.

Many different methods have been used for the treatment of Haemorrhoids suggesting the underlying condition and difference of opinion prevailing among surgeons.

The different methods used are:

(1) By injection (Morgan 1969)
(2) Rubber band ligation (Barron, 1963)
(3) By Anal Dilatation (Lord 1969)
(4) Cryosurgery (Lewis 1969)
(5) Lateral Sphincterotomy (Notaras 1971)
(6) Haemorrhoidectomy (Milligan and Morgan 1937)
   (a) Submucous Haemorrhoidectomy (Parke 1956)
   (b) Closed Haemorrhoidectomy (Furguson, Haeton 1959)

As recurrence following surgery is quite common (20% - 30%) alternative methods suggest band ligation, sclerotherapy and cryosurgery have become more popular in recent years.
The aim of present study is to evaluate cryosurgery as the modality of treatment for haemorrhoids, studying cryobiology and comparing the results of success at the end of 6 months, 2 years and 5 years. As cryosurgery of piles is very convenient, economical and painless, requires local or regional anaesthesia only and hospital stay required is few hours to 24 hours only and can be used in old poor risk patients - the scope and need for the present work is justified.

REVIEW OF LITERATURE

Classification
Haemorrhoids are classified as internal, external and interno external (mixed) haemorrhoids.

Internal Haemorrhoids: They are dilated veins of superior haemorrhoidal plexus located in upper 2/3rd of anal canal. These originate above ano-rectal (Dentate or Pectinate) line and is covered by mucous membrane.

External Haemorrhoids: They are dilated veins of inferior haemorrhoidal plexus located in lower 2/3rd of anal canal below denatate line and is covered by skin.
Mixed haemorrhoids: They are combination of external and internal haemorrhoids seen as a result of two plexuses anastomosing freely.

Traditionally, internal haemorrhoids are essentially varicosities of venous plexus in wall of anal canal but GRAHAM - STEWART (1963) divided internal haemorrhoids into 2 categories.

1) **Vascular**: Consists mainly of distended veins and are usually seen in young adults.

2) **Mucosal**: Consists of hypertrophied rectal mucosa and are seen in older individuals.

**Degree of Haemorrhoids (Goligher’s system)**

- First Degree Haemorrhoids: Bleeds during defecation but do not prolapse
- Second Degree Haemorrhoids: Prolapse during defecation but reduces spontaneously.
- Third Degree Haemorrhoids: Prolapse with or without defecation which requires digital reduction.
- Fourth Degree Haemorrhoids: Remains prolapsed permanently.
Number and position of Internal Haemorrhoids:

Primary Haemorrhoids are usually 3 in number and are situated at 3 o'clock (left lateral), 7 o'clock (Rt. posterior) and 11 o'clock (Rt. anterior) position. Occasionally secondary haemorrhoids varying from 1-4 in number are situated in between primary position. Most commonly posterior midline position.

SURGICAL ANATOMY OF ANAL CANAL:

Anal canal is the terminal portion of large intestine situated below the level of pelvic diaphragm and is about 4 cm. long. Embryologically it develops partly from Ectoderm and partly from Endoderm. This junction is indicated by dentate line which represents the former site of embryonic anal membrane.

The interior of anal canal is subdivided into two parts by dentate line, namely lower cutaneous zone line by true skin of anal verge and upper mucosal zone line with goblet cell columnar epithelium.

At the midpoint of anal canal there is an intermediate zone composed of stratified layer of mucous secreting epithelium.
In the upper anal canal 6-10 longitudinal folds of columnar epithelium runs down to dentate line and covers submucosal vascular connective tissue to anal columns of Morgagni which then abnormally enlarged and form haemorrhoids.

At the dentate line, transverse crescentic folds of adjoining anal column are called anal valves. The anal sinuses or Crypt of Morgagni are shallow pockets above anal valves. Occasionally anal papillae are epithelial projection on anal valves representing remenants of anal membrane. Anal glands 5-10 in number open into crypts through narrow ducts.

The internal and external sphincter together from the sphincter mechanism of anal canal. These may be regarded as 2 tubes; inner tube (Internal sphincter) formed by downward extension of circular layer of rectal muscle wall and outer tube (external sphincter) formed by muscles of pelvic floor in continuation with levator ani muscle.

In between external and internal sphincter longitudinal muscle layer are made up of partly muscle and partly fibrous tissue. It runs down to end as fibrous band passing through perianal fat and subcutaneous part of external sphincter to be attached to perianal skin.
The fat of perianal space is thus broken up into small loculi. This fibrous tissue strand passes between internal sphincter to be inserted into mucocutaneous junction. This strand is called inter-muscular septum which separates the internal haemorrhoidal plexus in perianal space.

**Blood Supply:**

The anal canal is well endowed with blood supply. The arterial supply above the dentate line is by superior rectal artery and below by inferior rectal artery.

The venous drainage is upwards via superior rectal veins into inferior mesenteric veins into internal iliac vein (systemic) and lower part by inferior rectal vein into internal pudendal vein.

Mile (1939) postulated that arrangement of 3 primary haemorrhoids was due to difference in termination of Right & Left main branches of superior rectal artery. The left branch continues as single vessel while Right Branch divides into anterior and posterior division which constitutes site of primary haemorrhoids. Thomson (1975) has demonstrated that Fusiform, Sacular, Serpingous dilatation of submucous plexus of veins of anal canal so called
"Corpus cavernosum recti" by Stelzner (1963) are just a regular feature of normal anatomy. Haemorrhoidal bleeding is characteristically red in colour because blood acts mainly as filler and has no metabolic role and therefore remains arterial.

**Nerve Supply:**

The mucosa above the dentate line is supplied by autonomic nerves both sympathetic (Inferior hypogastric plexus) and para sympathetic (pelvic Splanchnic nerves) and below the dentate line by inferior rectal nerves.

The internal sphincter is supplied by autonomic nerves. It is contracted by a sympathetic nerves and relaxed by para-sympathetic nerves. The external sphincter is supplied by inferior rectal and perineal branch of 4th sacral nerve.

The aim of this study is to evaluate the effectiveness of cryosurgery in terms of relief of symptoms, complications, pain, hospital stay, work loss and residual symptoms at the end of 3 years.