REVIEW OF LITERATURE
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There are various methods for the treatment of hydrocele. The standard treatment of hydrocele described in many modern text books is either repeated aspiration or operation (Pender, 1973; Khitaker, 1976).

Tapping by Trocar and Cannula is an abandoned technique as by this procedure the patient can be made content of cure of his ailment for few weeks only. The sac again refills. Repeated tapping is liable to be followed by a little oozing into the sac. It may lead to transmission of infection leading to formation of hematocele and pyocele - for which the patient may be required to undergo orchiectomy.

No one, now-a-days, practices this obsolete method. Surgical correction of hydrocele is the most reliable method as it is based on the correction of the process leading to the formation of hydrocele fluid (Lands and Leonhardt, 1967). The various etiological factors which have been predicted for the formation of hydrocele are -

a. Excessive production of fluid within the sac.
b. Defective absorption of hydrocele fluid by the tunica vaginalis.
c. Interference with the drainage of fluid by the lymphatic vessels of the cord.

d. By connection with the peritoneal cavity as in congenital variety. Though surgical treatment of hydrocele is a fool proof technique, it has a high incidence of complications (Moloney, 1975). Careful aseptic surgery can, however, minimise the complications (Lord, 1968).

Surgery is the treatment of choice in congenital and infantile hydrocele; in fit patients under 40 years of age; in cases suspected of having a testicular tumour and those with hydrocele greater than 500 ml (Nash JR, 1979).

Various surgical procedures have been discovered for treating hydrocele based on their nature viz.

1) **Eversion of sac - Jaboulay's operation.**
   
   Jaboulay (1982), Berand (1825).

2) **Plication of sac - Lord's operation (Lord PH, 1956).**

3) **Sharma and Jhaveri's minimum dissection technique.**

4) **Wilkinson's operation.**

5) **Excision of sac.**

6) **Extrusion operation without sac excision or plication (Solomon, 1950).**
Andrews' (1967) bottles operation.

The basic principles of all these operations are one and the same. The tunica vaginalis which is supposed to be a secretary as well as the absorptive layer comes in contact of the subcutaneous tissue which hinders the formation but more so actively absorbs the hydrocele fluid secreted by the tunica. Thus the basic defects of excessive production and defective absorption get corrected.

In congenital hydrocele, where there is a patent processus vaginalis communicating with the peritoneal cavity - the sac is ligated at neck and then excised. The surgery is the only answer in such cases for complete relief.

All the above surgical procedures are not only associated with complications like post operative reactionary oedema, haematoma or infection but also require prolonged hospital stay and lead to a loss of man-hours of work.

Sclerotherapy can be an effective alternative in such cases. All those patients refused operation on the ground of ill health should be treated with sclerotherapy and for the remainder sclerotherapy is recommended but operation could be offered as an alternative (Nash JR, 1979).
The debate about the effectiveness of a particular form of treatment is not new; it goes back many centuries. Injection treatment or sclerotherapy in various forms has been used since the thirteenth century (Lands and Lechardt, 1967), Williams of Saliceto was reported to have inserted sugar and ginger into the hydrocele after allowing the fluid to escape through a cannula. Since then a number of agents have been used including -

1. Prostwine used at Guy’s hospital in the 18th century.
2. Brandy.
3. Tincture of iodine.
4. Phenol
5. Quinine and urethane.

This type of therapy is based on the principle that the sclerosant in dilute form will damage the mucosa of tunica vaginals, parietal as well as visceral layer, thus hindering the process of excessive formation of hydrocele fluid from the tunica.

The reason for the fall from favour of sclerotherapy in the earlier part of this century is unclear. There are no reports listing horrific complications or even reports showing poor results.
Mcloney used a mixture of -

1.5% phenol in water
2.5% glucose.
3.5% glycerine.

as a sclerosant for treating small and medium sized hydroceles. He made a comparison of results between a series of hydroceles treated by surgery with a complication rate of at least 17% haematoma and 10% sepsis, an average hospital stay of 5 days and a much longer time off work and a series treated by tapping and injections requiring 1-3 visits to O.P.D., an almost negligible complication rate and no failure in those completing treatment. In a series of 100 cases, treated in 20 years using 2.5% phenol only, he found haematoma in 2 cases only (0.2%) and sepsis in a 1 case (0.1%) .

In another series of 80 cases treated with sclerotherapy as an O.P.D. procedure by Gupta and Kala (I.J.S., 1983), the failure rate was 5%, 15% patients had mild testicular pain during injection and 4% patients had persistent testicular pain and tenderness for some time. However, 20 cases had haematoma or infection. A slight thickening of tunica vaginalis occured in 22.5% cases as a late effect but this was painless.

Recurrence was found in 5% cases.
Nodular testicle with blood stained fluid sometimes, is found following sclerotherapy (Moloney, 1975).

Nash (1979) in a series of 56 cases of hydrocele treated by sclerotherapy (2.5% phenol in water) found a 98% cure rate within an average follow-up of 18 months.

Nash (1984) in a series of 70 cases followed for a period of 5 years - found an early recurrence in 3 cases which were retreated early and did not recur at the 5 years review. The testicular pain after the injection of the 2.5% phenol was mild which was avoided by injecting a small quantity of local anaesthetic agent into the sac before injecting phenol. None of the complications resulted in hospital admission. Residual testicular thickening after treatment of large hydroceles was not surprising in view of the size of tunica vaginalis. This report of Nash (1984) helped in unfurling the fact that no recurrence will result any time after the sclerotherapy. This suggests sclerotherapy a highly effective, safe and cheap mode of treatment of hydrocele. Sclerotherapy thus should be considered for treatment of hydrocele in adults and should be regarded as the treatment of choice in the elderly (Nash, 1984).

Macfarlane (1983) using a different sclerosant reported equally good results.
Robert Kaye used another sclerosant (diluted tetracycline - Achromycin) in few cases. In a 61 years old patient with hydrocele containing 400 ml of fluid he injected 450 mg of achromycine diluted to a volume of 5 ml in sterile water after tapping the hydrocele fluid with proper aseptic condition. No further fluid accumulation was evident and after 1 year of follow up there had been no recurrence.

Another series of cases of hydrocele treated by tetracycline sclerotherapy has been published in New England Journal of Medicine with a 100% cure rate (Kaye and Baemar, 1952).

Sclerotherapy inspite of being a very good method of treating hydrocele has certain limitations. The cases selected should be free from any scrotal or testicular disease. It is not indicated in patients with ipsilateral hernia, in congenital or infantile hydrocele as the sclerosant will enter the peritoneal cavity and will cause chemical peritonitis.