MATERIAL & METHODS
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Patients attending surgery O.P.D. at M.L.B. Medical College, Hospital, Jhansi seeking treatment of hydrocele from June 1987 to May, 1988 were selected for sclerotherapy. In our study sclerotherapy was performed in only those cases of hydroceles who were found to fulfil the following criteria not having

- any local sepsis
- Gonococcal epididymo orchitis
- Filarial lymphangitis
- Grossly thickened or calcified tunica vaginalis
- Sac filled with semisolid debris associated with testicular degeneration.
- Malignancy of scrotum or testis.

Patients of younger age group (infants & children), patients having inguinal hernia and persistent procusus vaginalis were also excluded from the study.

Thus only those cases of primary vaginal hydrocele with age group between 20 - 70 years, not willing for surgery due to ill health or for fear of long time off work were selected for sclerotherapy.

All the cases undergoing sclerotherapy were enlisted in a register for assessing the result after subsequent follow up.
Clinical findings were noted in details.

viz -

- H/O Trauma
- Translucency
- Scrotal or inguinoscrotal swelling.
- Tenderness
- Fluctuation
- Local temperature etc.

Patients included in our study were categorized in various groups depending upon their age, size of hydroceles, concentration and amount of sclerosant (carbolic acid) used for the treatment.

<table>
<thead>
<tr>
<th>Table 1</th>
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<tbody>
<tr>
<td>Group I : 20 - 40 years</td>
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<tr>
<td>II      : 41 - 60 years</td>
</tr>
<tr>
<td>III     : 7 60 years</td>
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<tr>
<th>Table 2</th>
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<tbody>
<tr>
<td>Percentage of sclerosant used (Carbolic acid in .9% N/S).</td>
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<tr>
<td>Group I  : 2.5%</td>
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<tr>
<td>II       : 5%</td>
</tr>
<tr>
<td>III      : 7.0%</td>
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The maximum concentration, we used in our study was 7% aqueous phenol.

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<th>Table 3</th>
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<tr>
<td>Group I : 100 - 200 ml</td>
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<tr>
<td>II      : 200 - 400 ml</td>
</tr>
<tr>
<td>III     : 7 400 ml</td>
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</table>
In cases of bilateral hydroceles both sides were treated at the same time.

Hydrocele fluid was sent for cyto-biochemical examination before injecting the sclerosant.

Few cases with recurrence were operated and biopsy was taken from tunica, and testis so as to assess the effect of sclerosant on their structure.

**SCLEROSANT**

Carbolic acid diluted in isotonic normal saline was used as an sclerosant in our study. Carbolic acid (phenol) consists of colourless crystals with aromatic odour. It is soluble in water. It is available in dark glass bottles and remain in the form of crystals at room temperature, so bottle is warmed to liquify the phenol, the liquified phenol is then dissolved in normal saline bottle aseptically so as to get definitive known dilution.

Carbolic acid is an irritating substance. It denatures the protein when applied directly over the skin, a white pellicle of precipitated protein is formed, this soon turns red and eventually sloughs out having a cutaneous surface stained light brown. If it remains in contact with skin it penetrates deeply and may cause extensive necrosis. Proteins of mucous membranes get coagulated as they come in contact with phenol, the mucous membrane gets thickened and submucosal tissue gets fibrosed as phenol penetrates
the mucosa. Phenol destroys the secretory and absorptive power of the mucosa and this quality of phenol is taken advantage of in treatment of hydrocele with the use of sclerosant solution.

In this study we first used 2.5% phenol in few cases but as re-accumulation appeared soon we switched on to certain higher strength of phenol soln. e.g. 5% and 7% in other cases.

METHOD

The patients desiring sclerotherapy for the treatment of hydrocele were shifted to minor operation theatre.

The part was prepared, thoroughly cleansed with soap & water and then painted with savlon, Betadine (Povidone iodine) and then draped with sterile sheets.

Anæsthesia

2% lignocaine was injected locally in hydrocele sac.

Site of injection

After fixing the sac, at the upper border of hydrocele, local anaesthesia was given and then 14-16 G van-floen cannula was inserted in the sac through anaesthetized area and all the fluid was drained out.
The lowest point of scrotum was never used for tap & injection because of the possibility of seepage of sclerosant by gravity into cellular tissues causing pain & discomfort.

The fluid was fully aspirated and the volume recorded after which the testicle was carefully palpated to ensure complete emptying, and noting any pathology.

The sclerosant used in our study was phenol in normal saline of varying concentrations.

The volume of sclerosant injected depended on the volume of aspirate. The volume of sclerosant was 10% of up to 300 ml. Above 300 ml, 35 ml of sclerosant was used for any size.

<table>
<thead>
<tr>
<th>Amount of sclerosant used</th>
<th>Amount of hydrocele fluid aspirated</th>
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<tbody>
<tr>
<td>10 ml</td>
<td>100 ml</td>
</tr>
<tr>
<td>15 ml</td>
<td>150 ml</td>
</tr>
<tr>
<td>20 ml</td>
<td>200 ml</td>
</tr>
<tr>
<td>25 ml</td>
<td>250 ml</td>
</tr>
<tr>
<td>35 ml</td>
<td>7/ 350 ml</td>
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</table>

The punctured site was sealed by tincture benjbin and a scrotal bandage was given to be removed next day.

In the beginning patients were admitted in the ward and kept for observation to see the effect of increasing
concentration of carbolic acid. Fortunately no harmful
effect was observed in any case. Then gradually concen-
tration of carbolic acid was raised to 7%. Even with
this concentration no harmful effect was seen in any
patient. No antibiotics, or anti inflammatory drug was
given.

The patients were warned regarding some re-
accumulation of fluid and they were asked to come for
follow up at 3 weeks & 4 months.

If the size of scrotum suggested reaccumula-
tion of fluid at the follow up at 4 months, the fluid was
aspirated again and the second dose of sclerosant solution
injected as before.

Usually the aspirate was darker than on the
first visit and the fluid volume was much less.