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A CLINICAL STUDY OF DIFFERENT MODALITIES IN THE MANAGEMENT OF HYDROCELE

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Keywords:
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Abstract

Background: Hydrocele is one of the common diseases occurring worldwide. Surgery is mainstay for treatment. Aspiration of hydrocele fluid followed by injection of sclerosant is an alternative treatment modality. This study is an attempt to evaluate efficacy of various modalities in management of hydrocele in view of indicating the better& preferable modality.

Aim: 1) To study clinical profile of hydrocele 2) To study various modalities of management 3) To study post-operative complications with different modalities

Materials And Methods: It is Prospective Observational study from March 1st 2021 to August 31st 2022 conducted in the department of general surgery, tertiary care centre – Kalaburagi Karnataka .90 patients of hydrocele with age above 18 years were studied. Out of 90, 80 had unilateral and 10 had bilateral hydrocele. They were investigated, divided into 2 groups i.e., Small sized Hydrocele treated with Lords plication & Sclerotherapy. Large sized Hydrocele with Jaboulays procedure & Subtotal excision of sac.

Results: It was noted hydrocele was common in age group of 21–40 years, more unilateral & with predilection to right side. Most common postoperative complication was pain in small hydroceles & hematoma in large hydroceles. Lords plication & sclerotherapy had similar results on evaluation except Sclerotherapy had high recurrence rate in small hydroceles. In large hydroceles Jaboulays procedure was found to have less postoperative complication & reduced hospital stay compared to subtotal excision.

Conclusion: Lord's plication is preferable surgery for hydrocele of small size than other procedures. Sclerotherapy is good alternative for patients unwilling or not fit for surgery. Jaboulay's procedure is preferred over subtotal excision of sac for large Hydrocele with lesser complications, duration of stay& cost effective.

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Introduction:-

A hydrocele is an abnormal collection of serous fluid in the tunica vaginalis of the testis or within some part of the processus vaginalis.[1]

Hydrocele is one of the common diseases occurring worldwide. The incidence of hydrocele is particularly high in costal part of Karnataka[2].

The exact aetiology of hydrocele is not known. Hydrocele can be congenital or acquired. Acquired hydrocele are primary or idiopathic and secondary to epididymal or testicular disease. The most common form of hydrocele in adults is primary or idiopathic and affects about 1% of adult men.[3]

Surgery is the mainstay of treatment of the hydrocele[4]. Various surgical procedures have been described since olden days. Commonly used surgical procedure for hydrocele are Lords plication and Jaboulays procedure.

Bleeding, injury to cord structures and epididymis, torsion of testis are the common complications observed during surgery. Postoperative haematoma is the commonest complication which is due to oozing from small vessels. It is apt to say that a patient comes for surgery of a tennis ball and goes back with a cricket ball considering the size and the weight.

Aspiration of hydrocele fluid followed by injection of a sclerosant is another alternative treatment modality with good results.

Various surgical modalities have been followed with different outcomes. Hence the present study is undertaken to study clinical profile of Hydrocele and compare various treatment modalities.

Aims and Objectives of the Study: -

1) To study clinical profile of hydrocele
2) To study various modalities of management
3) To study post-operative complications with different modalities

Materials and Methods:-

Study design- It is a Prospective Observational study for a period of 18 months from March 1st 2021 to August 31st 2022 conducted in the department of general surgery, Tertiary care hospital– Kalaburagi. All cases of hydrocele were selected after applying inclusion-exclusion criteria.

Inclusion Criteria

1. Clinically diagnosed case of hydrocele
2. Patients above 18years age group

Exclusion Criteria

1. Inguinoscrotal swelling
2. Filiarial scrotum
3. Congenital hydrocele

Information is collected through prepared proforma from each patient. Collection of data from clinical history, physical examination, relevant investigation. Written and Informed consent taken in patients own vernacular language.

Statistical analysis done using IBM SPSS software version 20.0. Chi square will be applied for qualitative analysis. Student t test and ANOVA will be applied for quantitative data analysis. If $p<0.05$ will be considered significant.

Out of 90 patients who were studied 80 patients had unilateral and 10 patients had bilateral hydrocele. In the current study, in case of bilateral hydrocele each side hydrocele is considered as a separate swelling. So total numbers of

hydrocele swellings are 100. All the patients were routinely subjected to ultrasound assessment of scrotum and further subclassified as small and large sized hydroceleseach 50 based on ultrasound assessment the volume of the fluid findings approximately as:<200mlof fluid: Small Hydrocele and 200ml or moreof fluid: Large Hydrocele

Out of the small hydroceles group, 25 cases were subjected to Lord's plication, 25 cases for Sclerotherapy and in Large hydroceles group, 25 cases for subtotal excision of sac and another 25cases for Jaboulay's procedure.

Sclerotherapy was done by injecting2 ml of 3% solution of Sodium tetradecyl sulphate mixed with 5 ml of 1% Lignocaine and 5 ml of 0.25% bupivacaine after complete aspiration of Hydrocele fluid. Patients were reassessed at the end of 3 months and if any collection is noted either clinically or on ultrasound evaluation then they are subjected to one more sitting of Sclerotherapy, upto a maximum of 3 attempts after which the case is recorded as a recurrence in results if there is a persisting collection.

Lords plication, Jaboulay's procedure and Subtotalexcision of sac were done under spinalanaesthesia.

Postoperative period:
All the patients were given scrotal support for 48 – 72hrs. One course of antibiotics was given. Anti-inflammatory and analgesics were given post operatively for 4-5days.Wherever the corrugated rubber drain was kept, was removed after 2-4 days. The sutures were removed in most cases between 6-9 days. Sclerotherapy was done as an OPD procedure. The maximum number of patients who underwent surgery were discharged between 6-12th postoperative day in all 3 types of surgeries. The patients who developed the complications stayed more. Patients were followed up at regular intervals. The patients are monitored for immediate and late complications, focusing on scrotal oedema, hematoma, infection, postoperative hospital stay and recurrence.

Results: -

Age Incidence in Hydrocele.

Table 1:- Age distribution in Hydrocele.

Age in years	No. of cases	Percentage
<\=20	6	6.66
21-30	26	28.88
31-40	24	26.66
41-50	20	22.22
51-60	5	5.55
61-70	5	5.55
>\=71	4	4.44

Duration of Symptoms

Table 2:- Duration of Hydrocele (Presenting Complaints).

Duration	No. of cases	Percentage
0-6m	28	31.11
7m-1yr	24	26.66
2-3years	20	22.22
4-5years	8	8.88
6-10years	4	4.44
>10years	6	6.66

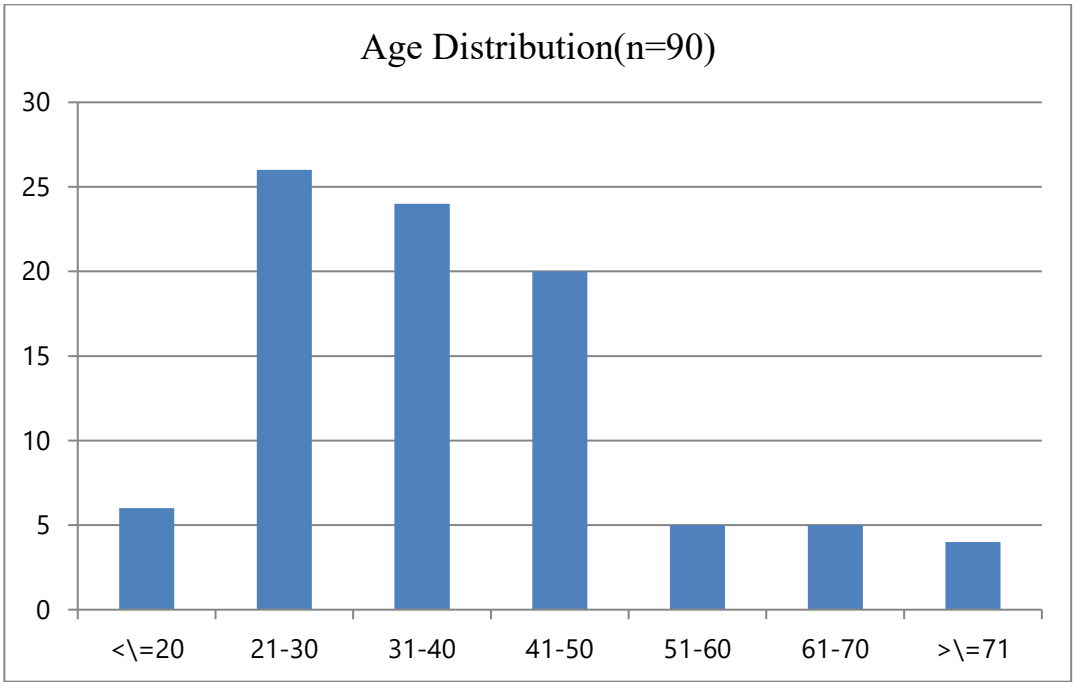

Figure 1:- Age Distribution.

The youngest patient is 19 years old and the oldest is 79 years. The maximum number of cases are seen in the age group of 21-40years in our study, i.e., a total cumulative percentage of 55.54%.

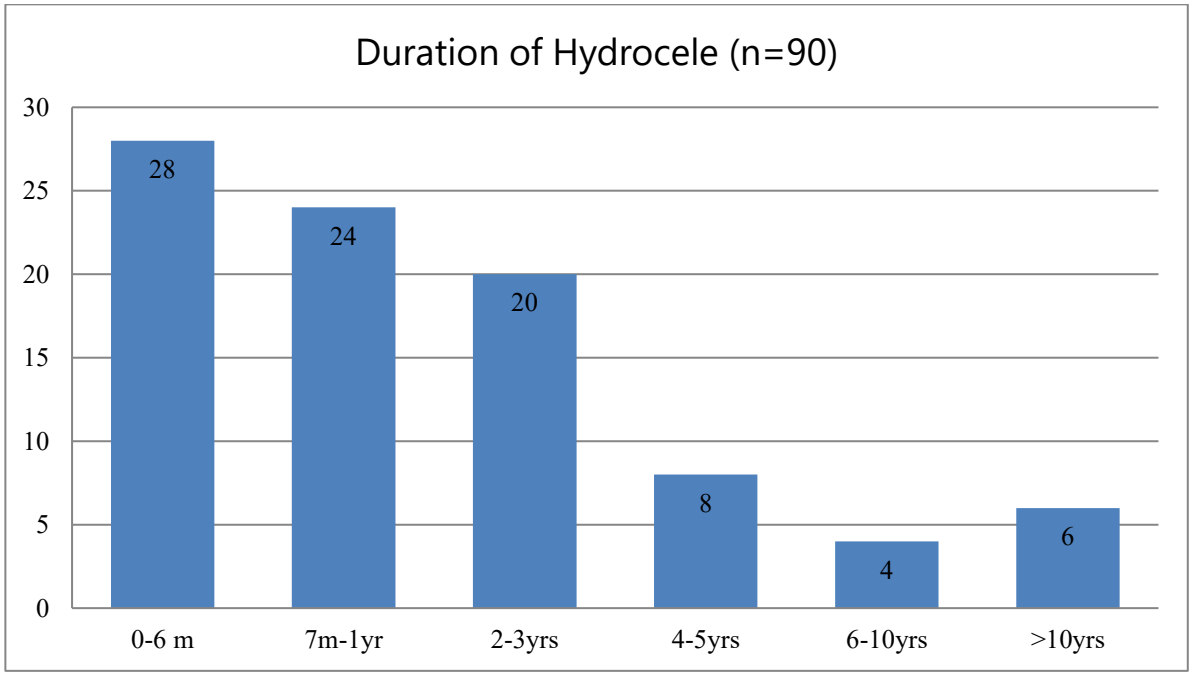

Figure 2:- Duration of Hydrocele.

In our study, majorityofthepatientspresentedwithin6monthsofthepresentingComplaintsi.e.,31.11%.The least duration of hydrocele that came for the treatment was a minimum of 1.5 months to a maximum duration of 14 years in our study.

Side Of Hydrocele

Table 3:- Side of Hydrocele.

Side	No. of cases	Percentage
Right	52	57.77
Left	28	31.11
Bilateral	10	11.11
Total	90	100

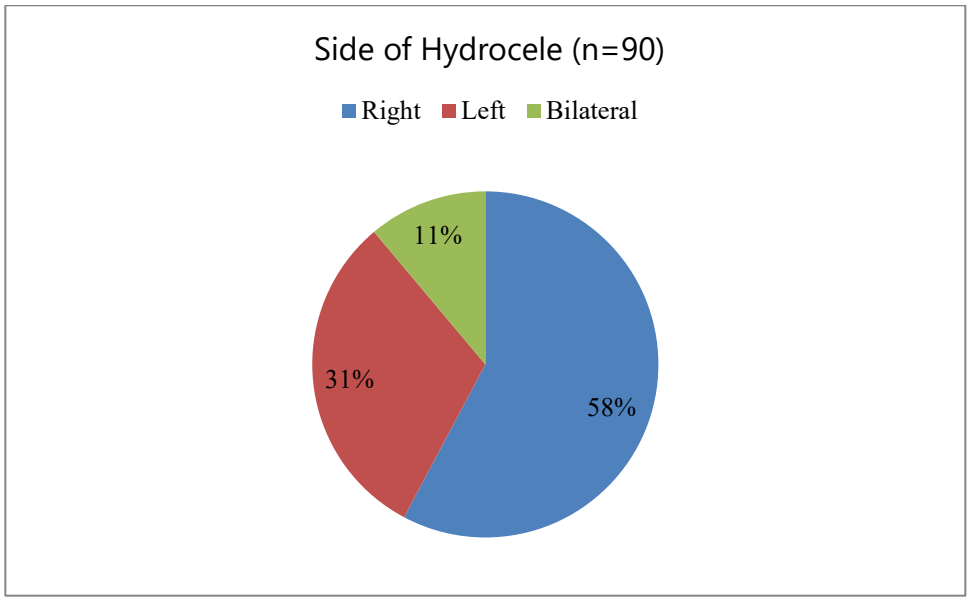

Figure 3:- Side of the Hydrocele.

The hydrocele is predominant on right side in our study.

Clinical Presentation

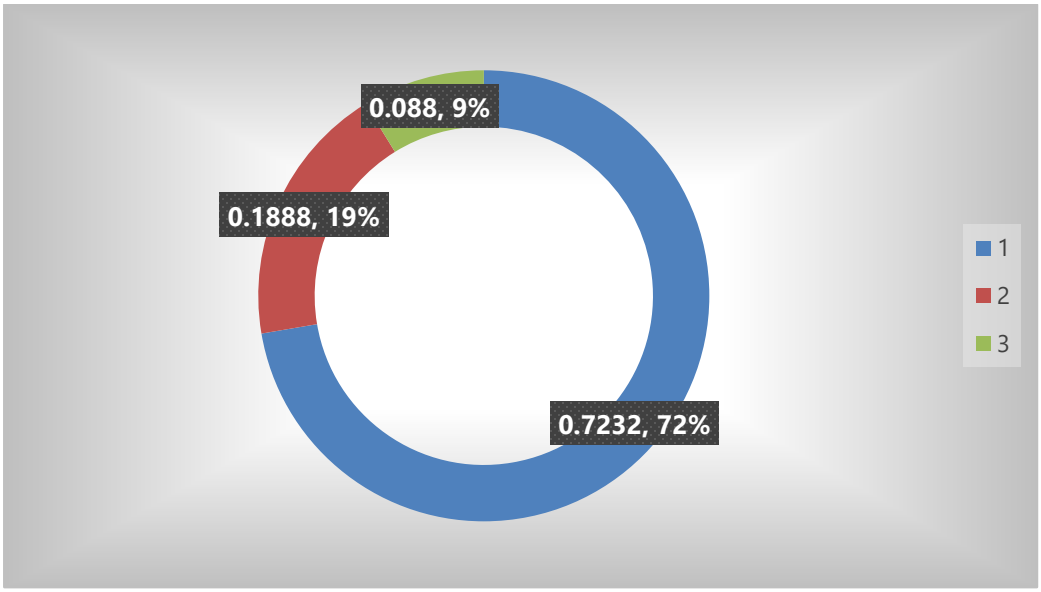

Figure 4:- Clinical Presentation.

Scrotalswellingwasthepresentingcomplaintinallthecasesinourstudyi.e.In90patients,alongsidewhich17patientsalsohad draggingtypeofpainofvariableduration and 8 patients had mechanical discomfort due to scrotal swelling (duringwalking, sexual intercourse, etc.,). However, presenting complaints other than scrotalswelling alone such as dragging pain and mechanical discomfort were recorded inpatients with large sized and bilateral hydroceles but not in the case of small sized ones.

Types Of Procedures

Table 4:- Types of procedures.

Type of procedure	Unilateral	Bilateral			Percentage
		Right	Left	Total	
1. Sclerotherapy	20	2	3	25	27.77
2. Lord's plication	20	3	2	25	27.77
3. Jaboulay's procedure	20	4	1	25	27.77
4. Subtotal excision of sac	20	4	1	25	27.77

Sclerotherapy:

This was done in 20 unilateral cases and in 2 bilateral cases patients on both the sides and in 1 patient on one side. The total number of hydroceles in which sclerotherapy was done is 25.

Lord's placation:

In 20 unilateralhydrocele patients Lord's plication was done. In 2 patients with bilateral hydrocele Lord's plication was done on both sides and in another 1 patient of bilateral hydrocele Lord's plication was done on one side only. Thus, the total number of hydroceles in which Lord's plication was done is 25.

Jaboulay's procedure:

In 20 unilateral hydrocelepatients Jaboulay's procedure was done. In bilateral cases, Jaboulay's procedure was done on both sides in one case and only on one side in four cases. Thusthe total number of hydroceles in which Jaboulay's procedure was done is 25.

Subtotal excision of sac:

This operationwasdone in 20 unilateral cases. In bilateral cases subtotal excision was done on both sides in one case and in four cases it was done on one side only.Thus he total number of hydroceles in which radical excision of sac done is 25.

Postoperative Course And Complications

Table 5:- Postoperative course and complications.

Type of procedure	Pain	Hematoma	Scrotal oedema	Wound Infection	Disruption of wound	Drain placed	Median Drain Removal Time	Median suture removal day	Recurrence
1.Sclerotherapy (25)	4	0	4	-	-	-	-	-	6

2.Lordsplication (25)	6	2	4	-	-	2	24hrs	6	-
3.Jaboulay's procedure (25)	12	4	6	1	1	14	48hrs	8	-
4.Subtotal excision of sac (25)	14	8	12	3	1	18	72-96h	9	-

Pain:
In Lords plication postoperative pain was presented in 6(24%) cases as compared to that in sclerotherapy technique, it is seen in 4 (16%) cases only.Incase of large hydroceles postoperative pain requiring injectable analgesia was noted in patients who underwent Jaboulay's procedure in 12 (48%) cases and in subtotal excision of sac 14(56%)cases.

On applying chi-square test the p value is found to be 0.5713 in case oflargesizedhydroceles. This 'p value' showsthat the difference in the occurrence ofpostoperative complication painamong Jaboulay'sprocedureand Subtotal excision of sac isstatistically not significant. Insmallhydrocelesp valueis foundtobe0.4795henceforth nostatistically significant difference between Lordsplication and sclerotherapy group.

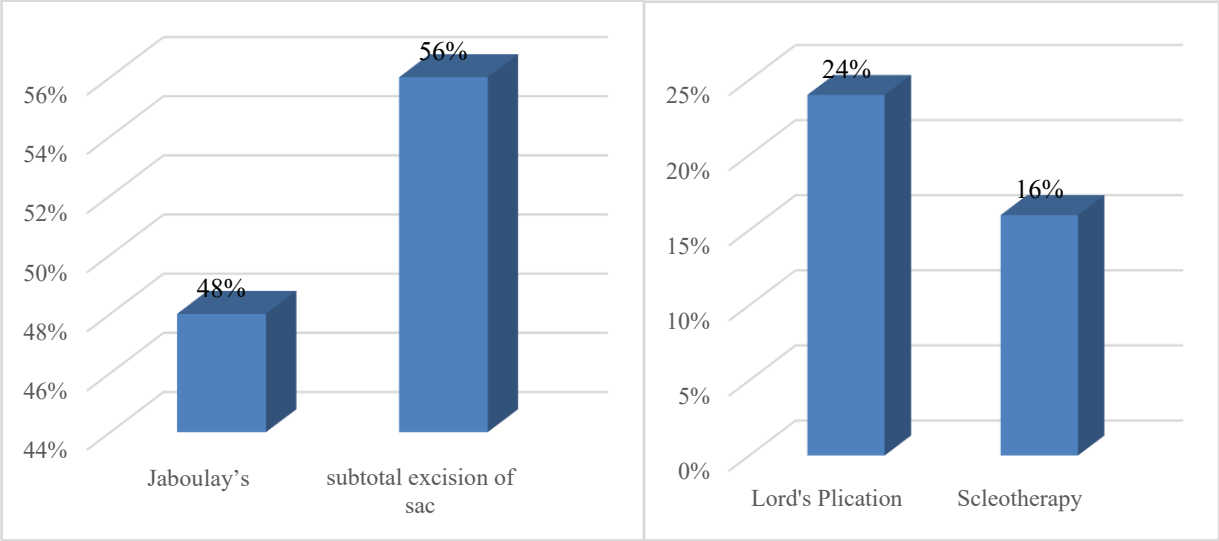

Figure 5:- Incidence of postoperative pain.

Hematoma:
Hematoma was present only in 4(16%) cases of Jaboulay'scompared to that of 8 (32%) cases in subtotal excision of sac.2 (8%) cases of Lord's plication developed hematoma and no cases ofsclerotherapydevelopedhematoma in that of small hydroceles.

Onapplyingchi-squaretestthepvalueisfoundtobenotsignificant;p value of 0.1489 incaseofsmall hydrocelesand,0.1853 incaseoflargehydroceles. Thismeansthatthedifferenceinoccurrenceof postoperative complication hematoma among all the proceduresisstatisticallynot significant.

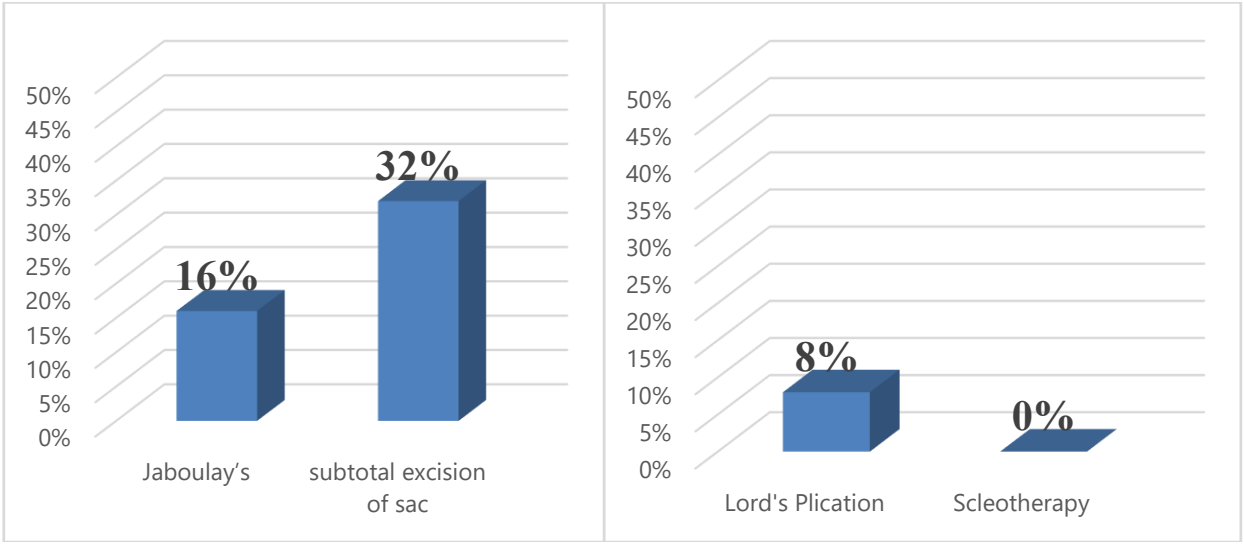

Figure 6:- Incidence of Post-operative Hematoma.

Scrotal oedema:

Scrotal oedema developed in Large sized Hydrocelesundergoing Surgery in majoritycases in contrast to Small Hydroceles i.e., in 6(24%)casesofJaboulay's procedure and 12 (48%) cases of subtotal excision of sac.However, it is noted in small sized hydroceles, in only 4(16%) cases whounderwent Lord'splication and in 4 (16%) cases of sclerotherapy technique.

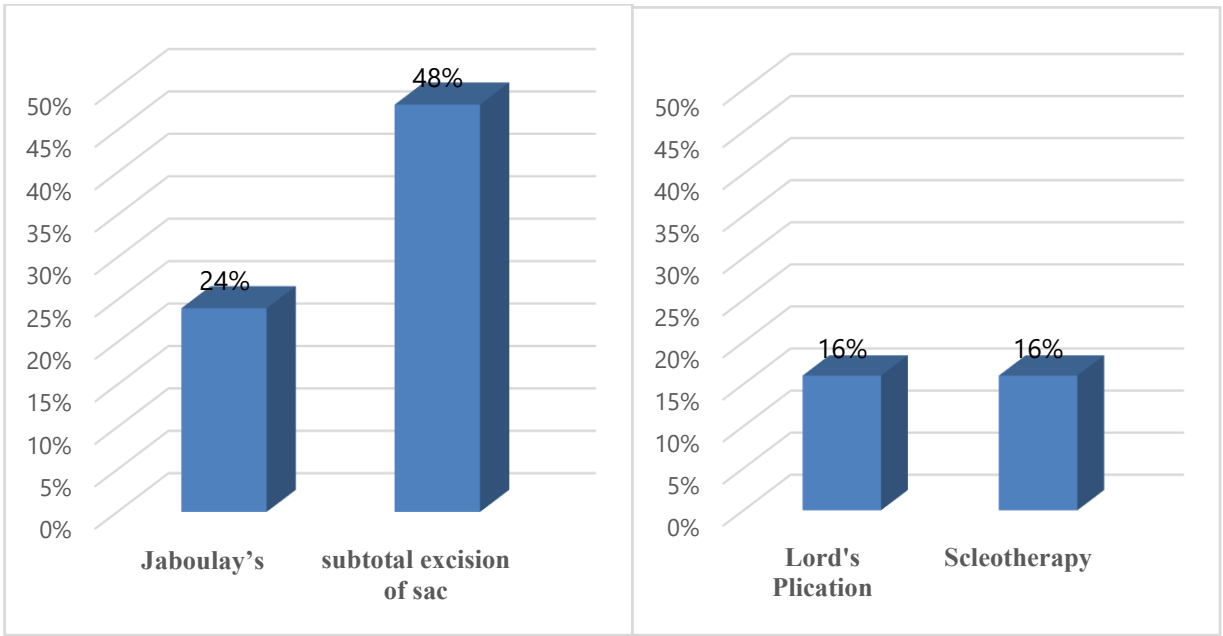

Figure 7:- Incidence of postoperative scrotal oedema.

On applying chi-square test the p value is found to be not significant; p value of 0.1 in the SmallHydrocelegroup and 0.0771 intheLargehydrocele group.Thismeansthatthedifference in occurrenceofpostoperativecomplicationscrotaloedemaamongalltheprocedures is statistically not significant.

WoundInfection:
Woundinfectionwasnotedonlyincaseoflargehydrocelesas noted in one case of Jaboulay's (4%)and in three cases of subtotal excisionof sac(12%).In small hydroceles that underwent Lord's plication and sclerotherapy noinfection was noted.

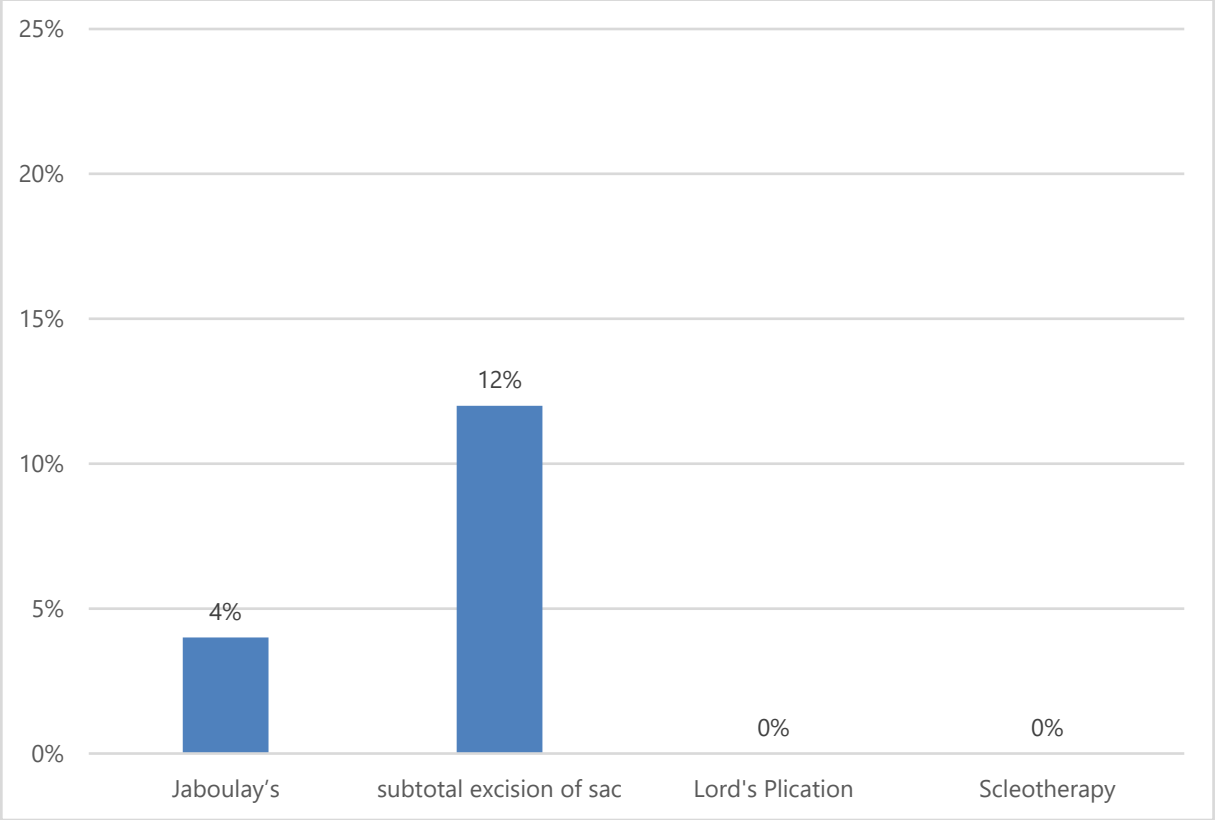

Figure 7:- Incidence of wound infection in large hydrocele.

Onapplyingchi-squaretestthepvalueisfoundtobe 0.100061 which is not significant.Thismeansthatthedifferenceinoccurrenceofpostoperativecomplicationinfectionis statistically not significant in our study.

Drainplacement:
InLord's placation drainwasplacedin2(8%)casesonly.In Jaboulay'sprocedure drain was placed in 14(56%) cases out of 25cases.In Subtotal excision of sac all 25(72%) cases drain was placed.Whenever drain was placed it was removed within 48 hours in most cases.In some cases with soakage it was continued for another 2-3 days.

Postoperative Durationof Hospital Stay
Table 6:- Postoperative hospital stay.

Type of Operations	**Number of days**		
	0-6	**7-13**	**13-18**
Lord'splication	21	4	0
Jaboulay's procedure	18	7	0
Subtotal excision of sac	4	13	8
Sclerotherapy	25	0	0

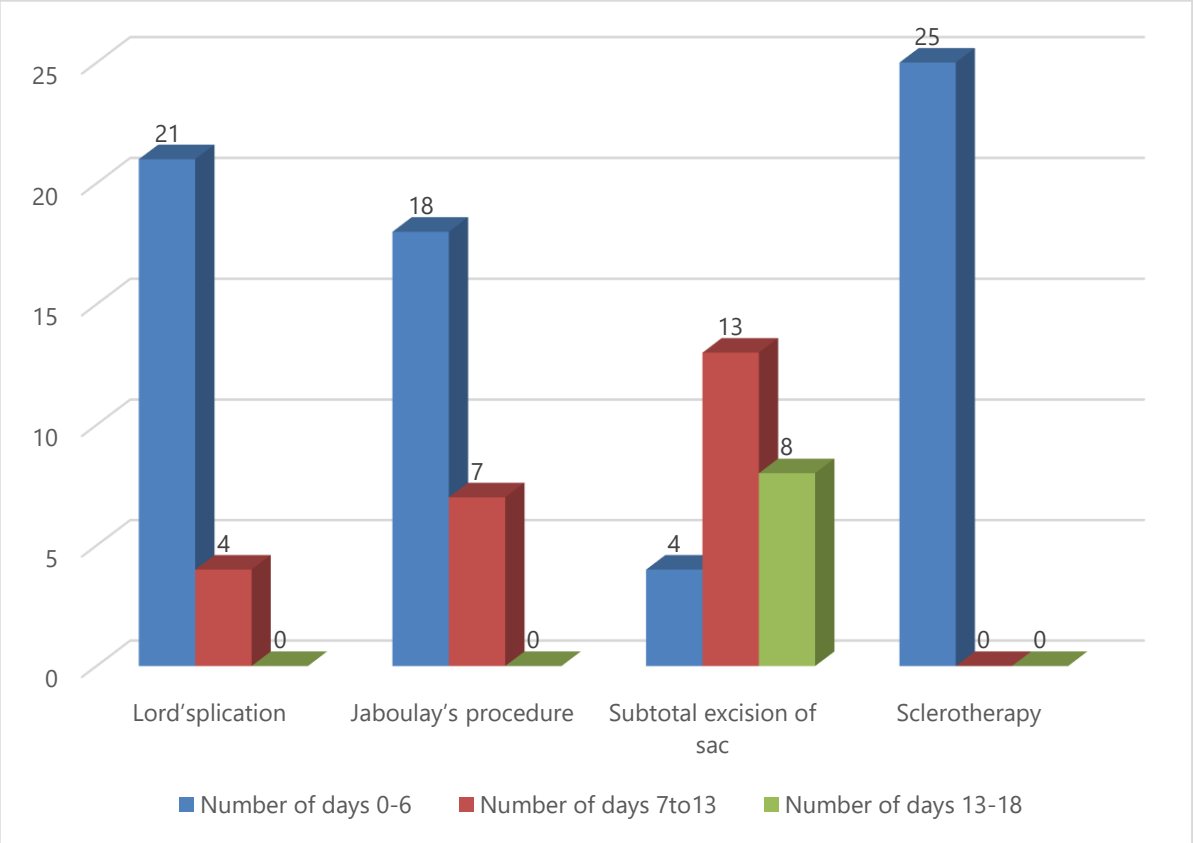

Figure 8:- Postoperative hospital stay in days.

In our series sclerotherapy was conducted as an outpatient procedure and patients were subsequently reviewed on OPD basis, Hence, no post procedure hospital stay was there.All the surgical patients had median postoperative stay of 6 days. In the most of the patients who underwent Lord's plication were discharged within 0-6 days i.e. less postoperative stay whereas majority of the patients who underwent Jaboulay's procedure and Subtotal excision got discharged between 7-13 days. One patient who developed hematoma and wound infection stayed longer and was discharged on 16th POD. Patients who underwent subtotal excision of sac had more postoperative stay, and in 2 cases upto18 days. This indicates excessive dissection leads to increased days of post-operative stay and thereby excessive cost expenditure.

Outcome of Sclerotherapy 25 Hydroceles were subjected to sclerotherapy (20 unilateral and 2 both side bilateral cases on one side in 1 bilateral). 13 cases (52%) were cured after first attempt with sclerotherapy, 4 cases (16%) after second attempt, 2 cases (8%) after third attempt and 6 cases (24%) had recurrence.

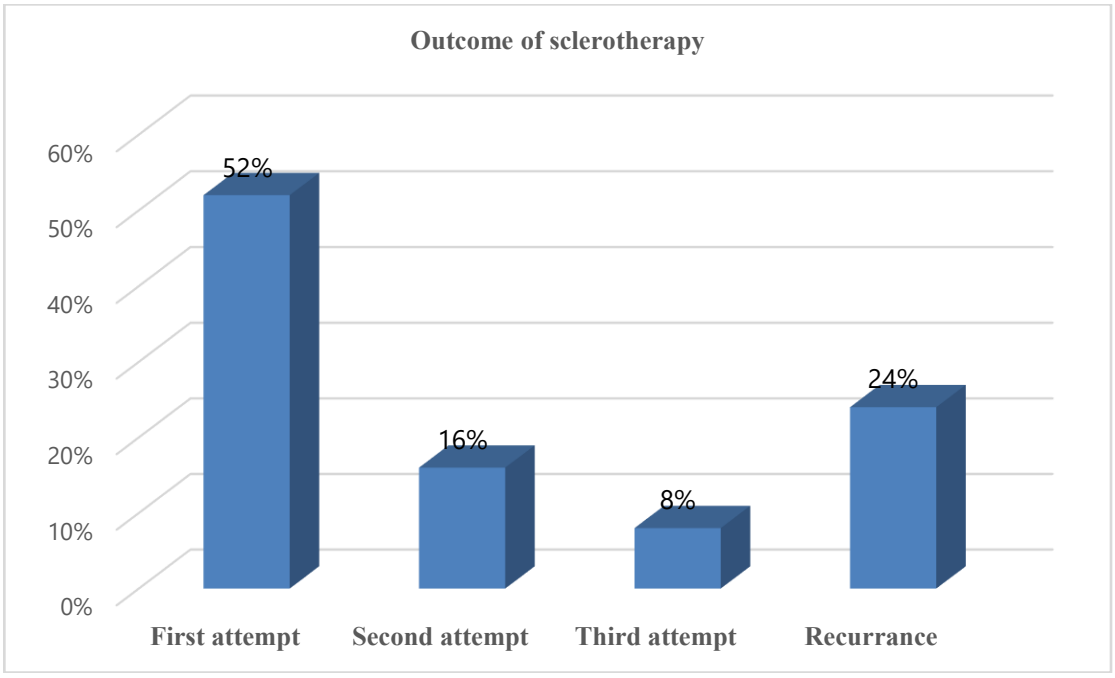

Figure 9:- Outcome of Sclerotherapy.

Recurrence:
No recurrence was noted in any case who underwent surgery. 6(24%) cases who underwent sclerotherapy had recurrence.

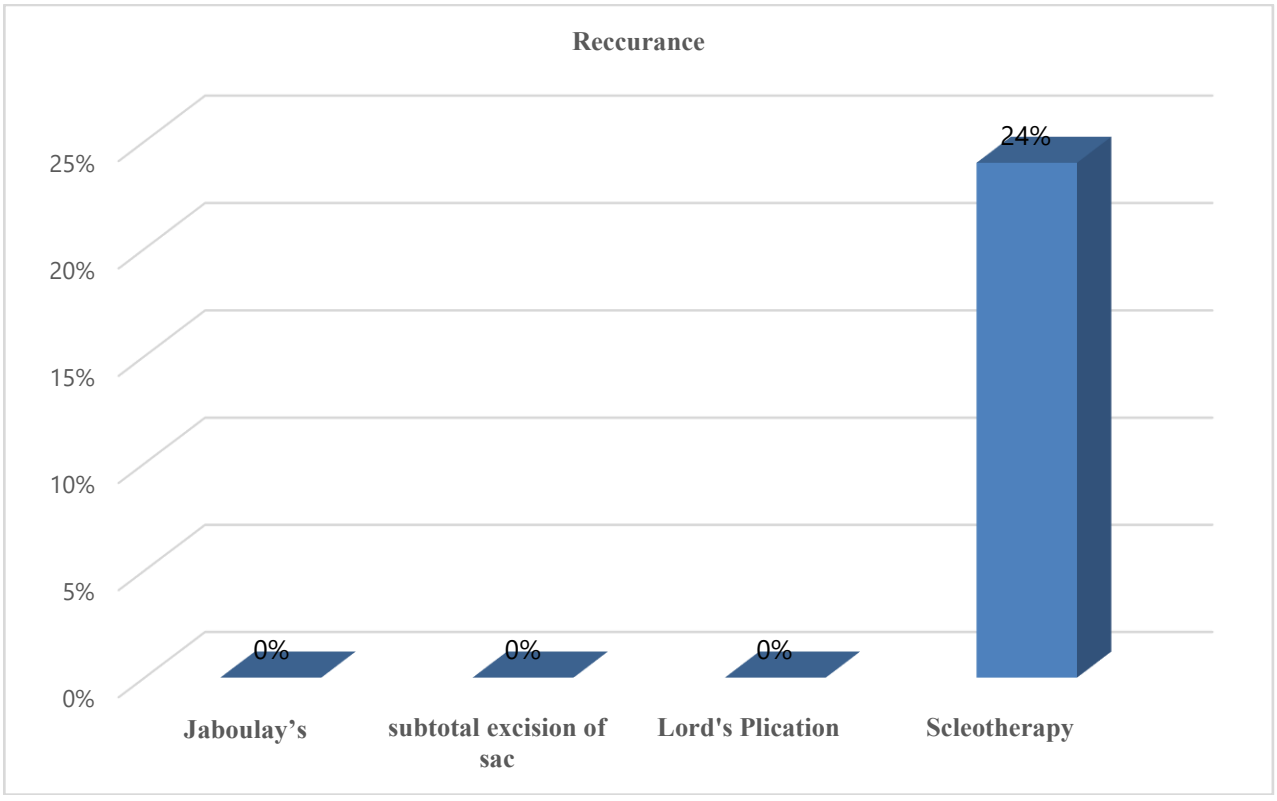

Figure 10:- Recurrence.

Discussion:-

Cystic swellings of the scrotum are widely considered one of the most common clinical entities that a surgeon comes across in daily practice.Although easily detectable, the vast majority remain asymptomatic, and attain a considerable size before causing discomfort to the patient.Most patients, however, hesitate to seek medical attention during the early stages, these swellings being a source of embarrassment and due to a lack of awareness. This results in considerable physical, psychological, social, and economic distress.These patients often present late with complications. The aetiology of the cystic causes of scrotal enlargement is diverse, itranges with hydrocoele being the most common cause of such swellings. [5]

Hydrocele is found in all age groups but young adults are most commonly affected as illustrated in this study. Majority of the patients in this series belong to the age group of 21-40 years (55.5%). The youngest patient was 19year old and the oldest was 79yearold.

In Meredith F Campbell study, author has quoted 90% of his patients were over 21 years of age and the condition is being most frequently observed between ages 20-40 years (cumulative percentage 43.86%) youngest is 6 years of age and eldest in his study is 81 years ofage[6]**.** Subith et al (2014), in their assessment of 170 cases of cystic scrotal swellings, observed that 40% of patients were between 31 and 40 years of age.[7]

In our Study most of the hydroceles presented between 6 months and 2 years of first noticing thepresentingcomplaint. There was more predilection of hydrocele to right side in our study. There is predilection to right side in51.26% as perMeredith F Campbellstudy. [6]

The primary presenting symptom in all cases was gradually progressing painless swelling of the scrotum.Subith et al (2014) found that scrotal swelling was the presenting complaint in 59% of cases. It was associated with pain in 28%. In the majority comprising 46% of patients, the mean duration of swelling before presentation was 1-2 years. In 17%, the duration of symptoms was for more than 2 years.[7]

In the present study 24% cases developed postoperative pain in Lord's procedure compared to 16% cases in sclerotherapy technique. In large hydroceles, 48% cases of Jaboulay's procedure developed postoperative pain requiring injectable analgesia, in contrast to 56% cases that underwent subtotal excision of sac. Pain was ranging from mild degree which responded to oral analgesics to severe degrees, which required injectableanalgesics.Albrecht W et aldid a study to compare Lord's operation with traditionalsurgical procedures with respect to the percentage of patients reporting postoperative pain (4.3 versus 15.8%).[8]

8% of patients with Lords plication developed postoperative hematoma, 16% in Jaboulays procedure, 32% in subtotal excision of sac and sclerotherapy recorded no incidence of post procedure hematoma at all.A study conducted by Kemparaj T et al., 7 of the 106 patients (6.6%) who underwent Jabouley's procedure developed hematoma formation. This complication was not seen in patients undergoing Lord's plication.[5]

Scrotal oedema was more in Jaboulay's procedure 24% cases and subtotal excision 48% and least in the Lord's plication 16% and sclerotherapy technique 16%.SinghDR et al performed a study on Lord's procedures in 26 patients as outpatient operation. Postoperative complications were negligible except for the scrotal oedema in 3 (11.53%) cases. No recurrence was noted till one year follow up.[9]

According to a retrospective study conducted by Kiddoo et al (2004), the overall complication rate following outpatient scrotal surgery was 19.2% and the most common complications witnessed after surgery for hydroceles and spermatoceles were persistent scrotal swelling, inflammation and postoperative infection.[10]

Swartz et al reported that the overall complication rate was 20% and included recurrence or persistent swelling (6%), hematoma (5%), and infections (3.6%); 95% of complications were seen after hydrocelectomy.[11]

In our study only 6 cases (24%) who underwent sclerotherapy had a recurrence as compared to all the other cases who underwent surgery and didn't have a recurrence during our study period.Korkes F et al., conducted a study in 2021 in 39 patients who underwent Jaboulay technique and 14 patients who underwent sclerotherapy and they were retrospectively analysed.Successrates were 94.8% after surgery and 92.8% after sclerotherapy. Hydrocele recurred

in two men (5%) who underwent surgery. For these patients, they performed aspiration and sclerotherapy. For seven men (50%) in the Sclerotherapy Group, a second procedure was required, and for one of these men, a third procedure was performed to obtain success. It has a high success rate, low complication rates, fast discharge and patients return quicker to activities of daily living as seen in our study.[3]

Conclusions:-

1. Lord's plication is the preferable surgery for the hydroceles of smaller size compared to other conventional procedures as Lord's procedure is much easier and simpler in technique and it can be done through a small incision. As the sac is not stripped from the surrounding scrotal tissues, bleeding is minimal, postoperative hematoma does not occur and consequently other complications like pain, fever, infection, disruption of wound etc can beprevented.
2. Sclerotherapy technique is also a good alternative technique with minimal rate ofcomplications and no hospital stay at all with however recurrence rates are higher, it is a good alternative modality for patients unwilling for surgery and not fit for surgery.
3. Jaboulay's procedure compared to subtotal excision of sac is preferable surgery for large sized hydroceles with lesser rate of complications like hematoma, scrotal oedema and lesser duration of postoperative hospital stay, thereby morecosteffectiveprocedure.

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