Results

The present study included 30 children of equal numbers of male and female with otitis media with effusion not responding to medical treatment and prepared for myringotomy and Grommet tube insertion under general anathesia. There is no significant difference as regard the age between 3 groups as shown in (table I).

As regard sex, adenoid enlargement and chronic tonsillitis is shown in(table 2-3).

There is no significant difference as regard sex or chronic tonsillitis but there is significant difference between the 3groups as regard adenoid enlargement. The surgical intervention were as follows adenoidectomy plus Grommet tube in 26 patients, adenotonsillectomy plus Grommet tube in 2 patients and tonsillectomy alone and Grommet in 2 patients.

Table (1): Mean value of age in years among studied group.

Age (in years)	Studied groups			P-value
	Group I	Group II	Group III	
Right ear				
no. of cases	6	8	16	$P_1 > 0.05$
range	8-12	8-10	8-12	$P_2 > 0.05$
$\bar{X} \pm$ SD	8.66 $\pm$ 1.63	8. 5 $\pm$ 0.75	8.93 $\pm$ 1.28	$P_3 > 0.05$
Left ear				
No. of cases	4	11	15	$P_1 > 0.05$
Range	8-12	8-13	8-12	$P_2 > 0.05$
$\bar{X} \pm$ SD	9.0 $\pm$ 2.0	9.63 $\pm$ 1.74	9.0 $\pm$ 1.30	$P_3 > 0.05$

P_1 bet GI & GII

P_2 bet GI & GIII

P_3 bet GII & GIII

This table shows there is no significant difference in age between group I, group II and group III in right and left ear.

Table (2): Number of percentage distribution of sex, adenoid enlargement & chronic tonsillitis between studied group of right ear.

Parameter	Group I (=6)		Group II (n=8)		Group III (n=16)		P-value
	No	%	No	%	No	%	
Sex Male Female	 3 3		 4 4		 8 8		> 0.05
Adenoid enlargement +ve -ve	 4 2	 66.6 33.3	 8 0	 100 0	 16 0	 100 0	< 0.05
Ch. Tonsillitis +ve -ve	 1 5		 1 7		 2 14		> 0.05

This table shows there is significant difference in adenoid enlargement between group I, group II and group III in right ear.

There is no significant difference among studied group as regard sex and chronic tonsillitis.

Table (3): Number & percentage distribution of sex enlarged adenoid chronic Tonsilitis among studied group of left ear.

Parameter	Group I (=4)		Group II (n=11)		Group III (n=15)		P-value
	No	%	No	%	No	%	
Sex M F	 3 1		 5 6		 7 8		> 0.05
Adenoid enlargement +ve -ve	 2 2		 11 0		 15 0		< 0.001
Ch. Tonsillitis +ve -ve	 0 4		 2 9		 2 13		> 0.05

This table shows there is significant difference in adenoid enlargement between group I, group II and group III in left ear.

The results of this study were presented under the following categories:-

(1) Radiological results

Axial C.T on the temporal bone revealed:

(a)group "1" (open /normal).

The mastoid pneumatization reach in antral zygomatic mastoid apex and sinudural angle, the aditus ad antrum is opened and there is non residual soft tissue. This was present in 10 ears (16.7%) 6 right and 4 left ears (Fig 11-1).

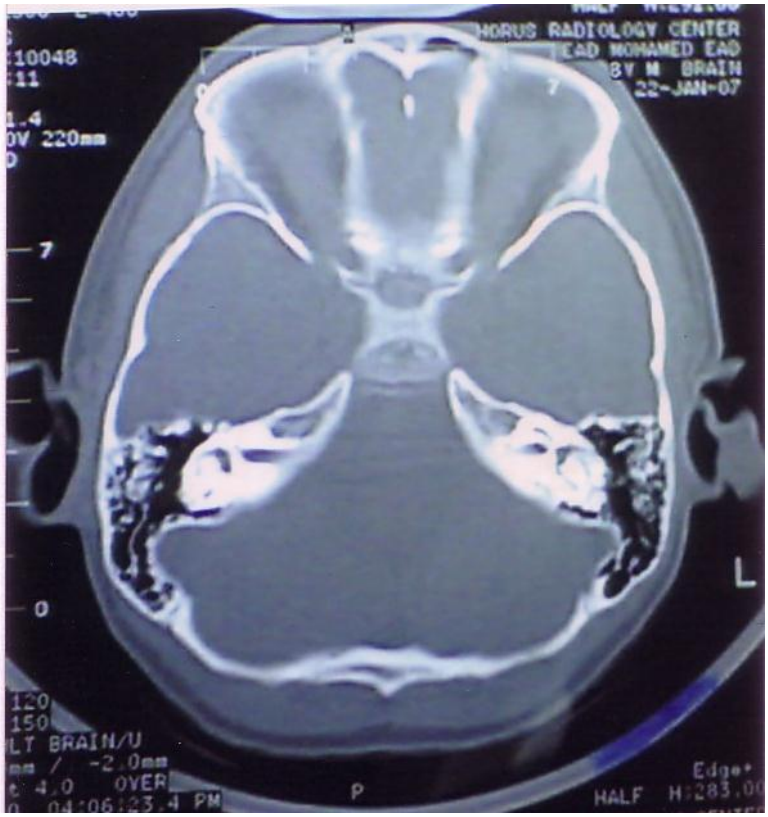


Fig (11-1)

Preoperative axial CT Temporal bone, Group 1 (open and Normal)

(b) *group "2" open sclerotic*

The mastoid pneumatization is present only in antral periantral regions cells and aditus ad antrum is opened ,there is little residual soft tissue (RST) in mastoid air cells .this was present in 19 ears (31.7%) 8 right and 11 left ears (fig 12-1).

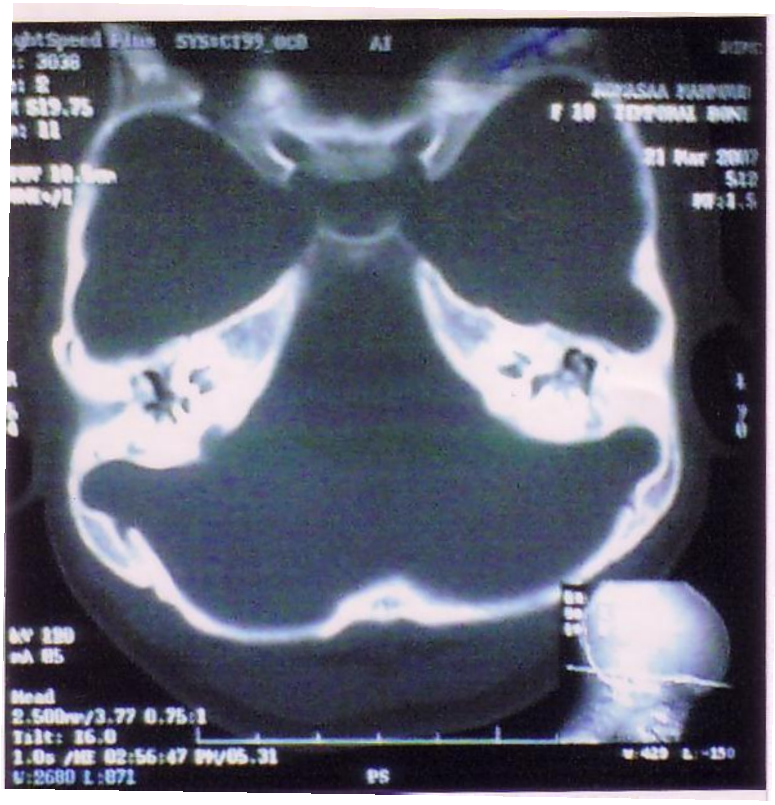


Fig (12-1)

Preoperative axial CT Temporal bone, Group 2 (open and Sclerotic)

(c)group "3" Blocked sclerotic

Mastoid pneumatization is present only in antral periantral region aditus ad antrum is blocked with residual soft tissue density RST these was present 31ears (51.6%) 16 right, 15 left (fig 13-1) .

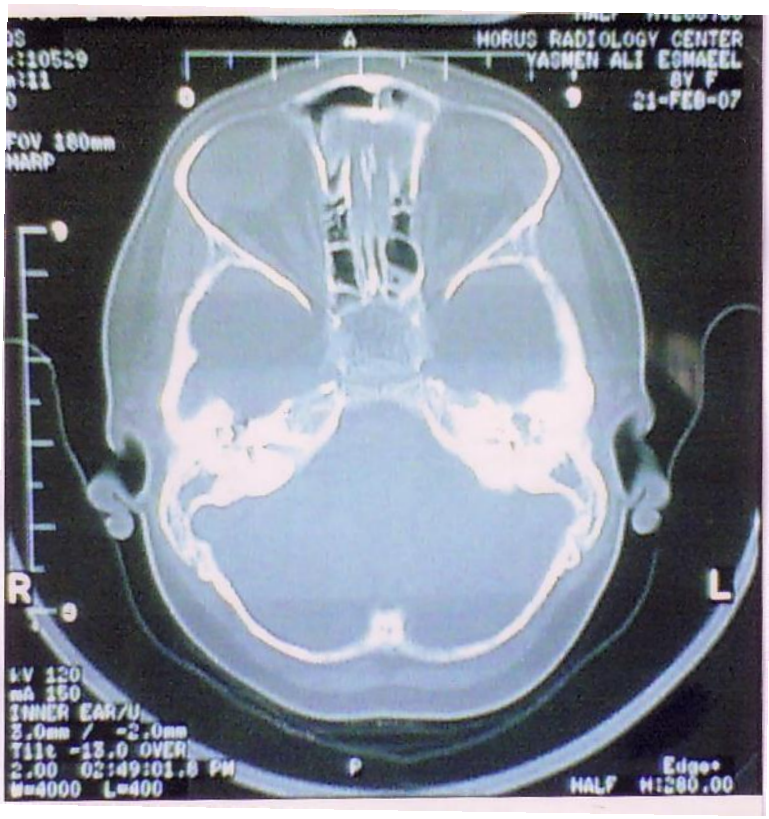


Fig (13-1)

Preoperative axial CT Temporal bone, Group 3 (closed and Sclerotic)

(2) Postoperative tympanometric follow up results:

A- In right ear: ***Comparison between the three group regarding PVT of right ear in first week, 3m and 6 months.***

1- The mean P.V.T measures of right ear postoperatively elevated as regard to time but there is no significant difference between the studied groups after *first week.*

2- But after the *third month* there was marked elevations of PVT among G1 and G2 but there is no elevation among patient of G3 so there is significant difference between G1 to G2 and there is significant difference between G1 and G3 but there is no significant difference between G2 and G3.

3- But after six months there no increase PVT value in G1 but there is increased in G2 and G3 so there is significant difference between G1 and G3 also significant difference between G2 and G3 and between G1 and G2 this is shown in (table 4).

Table (4): Comparison between the three group regarding PVT of right ear in first week, 3m and 6 months.

Parameter	Group I (n=4)	Group II (n=11)	Group III (n=15)	P-value
1st w $\bar{X}\pm$ SD	1.32 ± 0.08	1.25 ± 0.06	1.30 ± 0.05	$P_1 > 0.05$ $P_2 > 0.05$ $P_3 > 0.05$
3m $\bar{X}\pm$ SD	1.51 ± 0.16	1.35 ± 0.05	1.32 ± 0.09	$P_1 < 0.001$ $P_2 < 0.001$ $P_3 > 0.05$
6m $\bar{X}\pm$ SD	2.51 ± 0.39	1.81 ± 0.15	1.33 ± 0.08	$P_1 < 0.001$ $P_2 < 0.001$ $P_3 < 0.001$

P_1 bet GI & GII

P_2 bet GI & GIII

P_3 bet GII & GIII

This table shows there is no significant difference in physical volume: in first week among studied groups between group I, group II and group III in right ear.

This table shows there is significant difference in physical volume: in 3month between group I and group III. But there is no significant difference between G2 and G3.

This table shows there is significant difference in physical volume: in 6month among studied groups.

B- In left ear: ***Comparison bet 3 groups regarding PVT of left ear in 1st w, 3 m and 6 months***.

Also postoperative value of PVT measure of left ear shown in (table 5).

1- After 1 week postoperatively there was no significant difference of PVT measures between the patient of the studies group.
2- But after 3 months postoperatively, there was elevation of PVT measures in the G1 and G2 but there was no elevation of PVT measures among patient of G3 so there is significant difference among the studied group G1, G2 and G1, G3. But there no significant difference between G2 and G3.
3- After 6 months postoperatively there was also elevation of PVT measures was marked in G1 and G2 but there is slight elevations in G3 so there is significant difference between G1 and G3 and between G2 and G3 also between G1, G2. This mean that there was improvement of middle ear cleft condition and there was regression of pathological changes among group1,and group 2 but there was no improvement in group 3. Also spontaneous ventilation tube extrusion was noted at the 3rd month postoperatively in 3 ears with a scleratic mastoid with attic blockage and also in 5 ears in the same group G3 after 6 months, and ventilation tube replacement were needed for these patients.

Table (5) Comparison bet 3 groups regarding PVT of left ear in 1st w, 3 m and 6 months.

Parameter	Group I (n=6)	Group II (n=8)	Group III (n=16)	P-value
1st week $\bar{X}\pm$ SD	1.35 ± 0.12	1.29 ± 0.08	1.21 ± 0.19	$P_1 > 0.05$ $P_2 > 0.05$ $P_3 > 0.05$
3m $\bar{X}\pm$ SD	1.95 ± 0.07	1.35 ± 0.12	1.30 ± 0.10	$P_1 < 0.001$ $P_2 < 0.001$ $P_3 > 0.05$
6m $\bar{X}\pm$ SD	2.4 ± 0.74	1.89 ± 0.13	1.31 ± 0.05	$P_1 < 0.001$ $P_2 < 0.001$ $P_3 < 0.001$

P_1 bet GI & GII

P_2 bet GI & GIII

P_3 bet GII & GIII

This table shows there is no significant difference in physical volume: in first week among studied groups between group I, group II and group III in left ear.

This table shows there is significant difference in physical volume: in 3month between group I and group III. But there is no significant difference between G2 and G3.

This table shows there is significant difference in physical volume: in 6month among studied groups.

C- Comparison between physical volume in 1st week, 3 month and 6 months in each group in right ear.

1- The comparison or PVT measures after 1 week, 3 months and 6 months postoperatively *in G1 of right ear* showed in (table 6) improvement and but slight increased PVT measures after 1 week also there is significant differences between PVT measures between 1 week and after 3 months and there is significant differences between 3 months and 6 months postoperatively.

2- *But in G2* there was gradual increased of PVT measures after 1 week, 3 month and 6 month postoperatively, there was no significant difference between PVT measures after 1 week and 3 months, but there was significant difference between PVT measures after 1week and 6 month, and after 3 months and 6 months.

3- *But in G3* there was decrease in PVT measures after 1 week, 3 months and 6months also there was no significant difference of PVT among patient of this group.

Table (6): Comparison between physical volume in 1st week, 3 month and 6 months in each group in right ear.

Group I (n=6)	1st week	3 months	6 months	P-value
$\bar{X}\pm$ SD	1.32 ± 0.08	1.51 ± 0.16	2.51 ± 0.39	$P_1 < 0.001$ $P_2 < 0.001$ $P_3 < 0.001$
Group II (n=8)	1st week	3 months	6 months	P-value
$\bar{X}\pm$ SD	1.25 ± 0.06	1.31 ± 0.05	1.81 ± 0.15	$P_1 > 0.05$ $P_2 < 0.001$ $P_3 < 0.001$
Group III (n=16)	1st week	3 months	6 months	P-value
$\bar{X}\pm$ SD	1.30 ± 0.05	1.32 ± 0.09	1.33 ± 0.08	$P_1 > 0.001$ $P_2 > 0.001$ $P_3 > 0.001$

P_1 bet 1st week and 3 months.

P_2 bet 1st week and 6 months.

P_3 bet 3 months and 6 months.

This table shows in G1 there is significant difference in physical volume: in group I, at 1st week, 3 months and 6 months. While in G2 there is no significant difference in PVT between 1st week and 3 months while there is significant difference between 1st week and 6 months and between 3 months and 6 months in right ear.

In group III there is no significant difference in physical volume: at 1st week, 3months and 6 months of right ear.

D- Comparison between physical volume in 1st week, 3 months and 6 months in each group in left ear.

Comparison of PVT measurement after 1st week, 3 month and 6 months postoperatively of left ear showed in (table 7) for each group dependly.

1- *For G1* there was marked increased in PVT measures gradually after 1week, 3 months and 6 months respectively also there was significant difference of PVT measures in this group postoperatively after 1w, 3m and 6m.

2- *But in G2* there is marked increase in PVT measure after 3m postoperative and 6 months but there was no significant difference in PVT measures after 1w, 3m but there was significant difference in PVT measures after 1 w and 6m and also after 3m and 6m.

3- *But in G3* there was no improvement in PVT measures among patients of this group and also there was no significant difference in PVT measures after 1w, 3m and 6m for this study group.

Table (7): Comparison between physical volume in 1st week, 3 months and 6 months in each group in left ear.

Group I (n=4)	1st week	3 months	6 months	P-value
Left ear $\bar{X}\pm$ SD	1.35 ± 0.12	1.95 ± 0.07	2.40 ± 0.74	$P_1 < 0.001$ $P_2 < 0.001$ $P_3 < 0.001$
Group II (n=11)	1st week	3 months	6 months	P-value
Left ear $\bar{X}\pm$ SD	1.29 ± 0.08	1.35 ± 0.12	1.89 ± 0.13	$P_1 > 0.05$ $P_2 < 0.001$ $P_3 < 0.001$
Group III (n=15)	1st week	3 months	6 months	P-value
$\bar{X}\pm$ SD	1.21 ± 0.19	1.30 ± 0.10	1.31 ± 0.05	$P_1 > 0.001$ $P_2 > 0.001$ $P_3 > 0.001$

P_1 bet 1st week & 3 months

P_2 bet 1st week & 6 months

P_3 bet 3 months & 6 months

This table shows there is significant difference in physical volume: at 1st week, 3 months and 6 months in G1 of left ear. While there is no significant difference in physical volume: between 1st week and 3 months in G2 of the left ear while in there is significant difference in PVT between 1st week, 6 months, 3 months and 6 months .

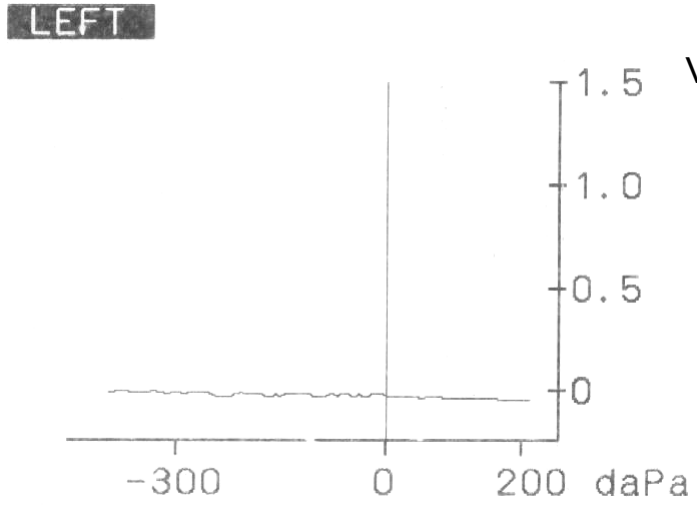
In group III, there is no significant difference in physical volume: 1st week, 3 months and 6 months.

Fig (14-1) Postoperative tympanometric physical volume follow up in the 1st week in group 1

Tympanogram

Name: Ead Mohamed

Age: 8 years



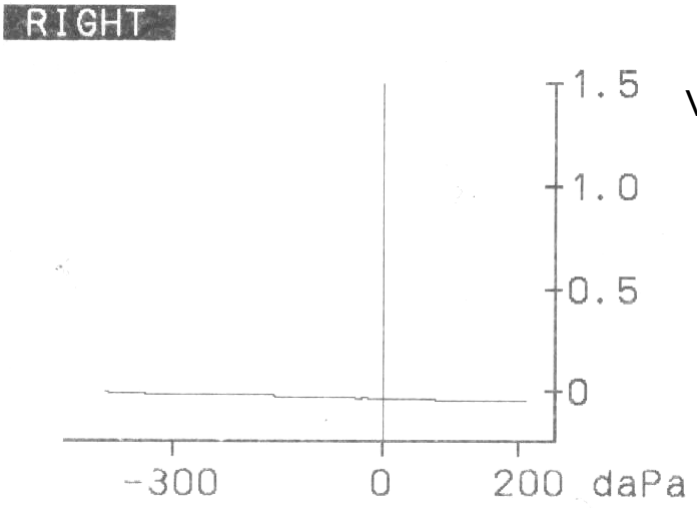


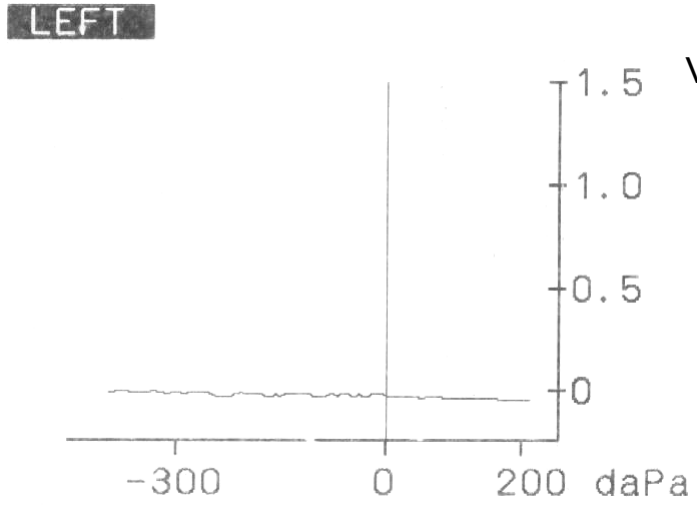
Fig (14-1)

Fig (15-1) Postoperative tympanometric physical volume follow up in the third month in group 1

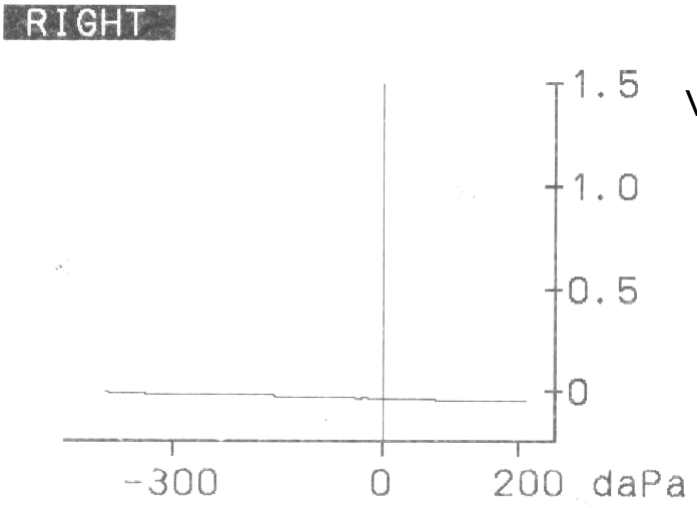
Tympanogram

Name: Ead Mohamed

Age: 8 years



Volume : 1.93



Volume : 1.9

Fig (15-1)

Fig (16-1)Postoperative tympanometric physical volume follow up in 6 months in group 1

Tympanogram

Name: Ead Mohamed

Age: 8 years

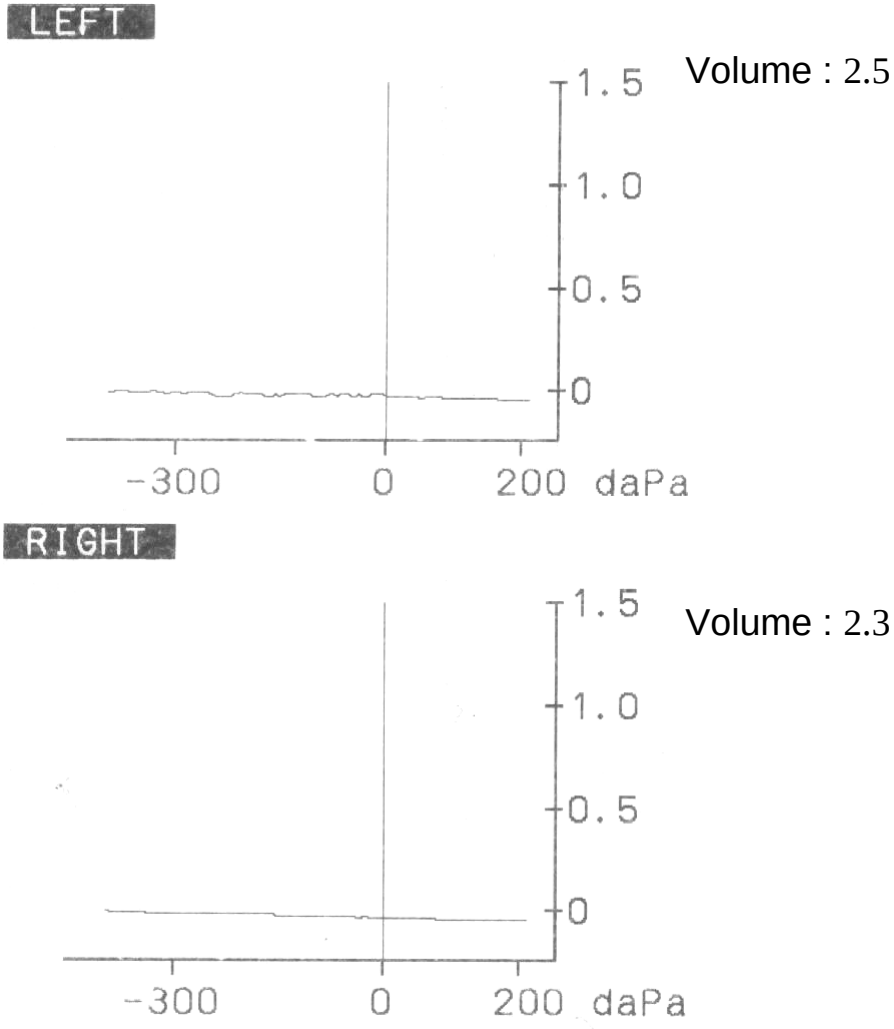


Fig (16-1)

Fig (17-1)Postoperative tympanometric physical volume follow up in the 1st week in group 2

Tympanogram

Name: Romassa Mahmoud

Age: 10 years

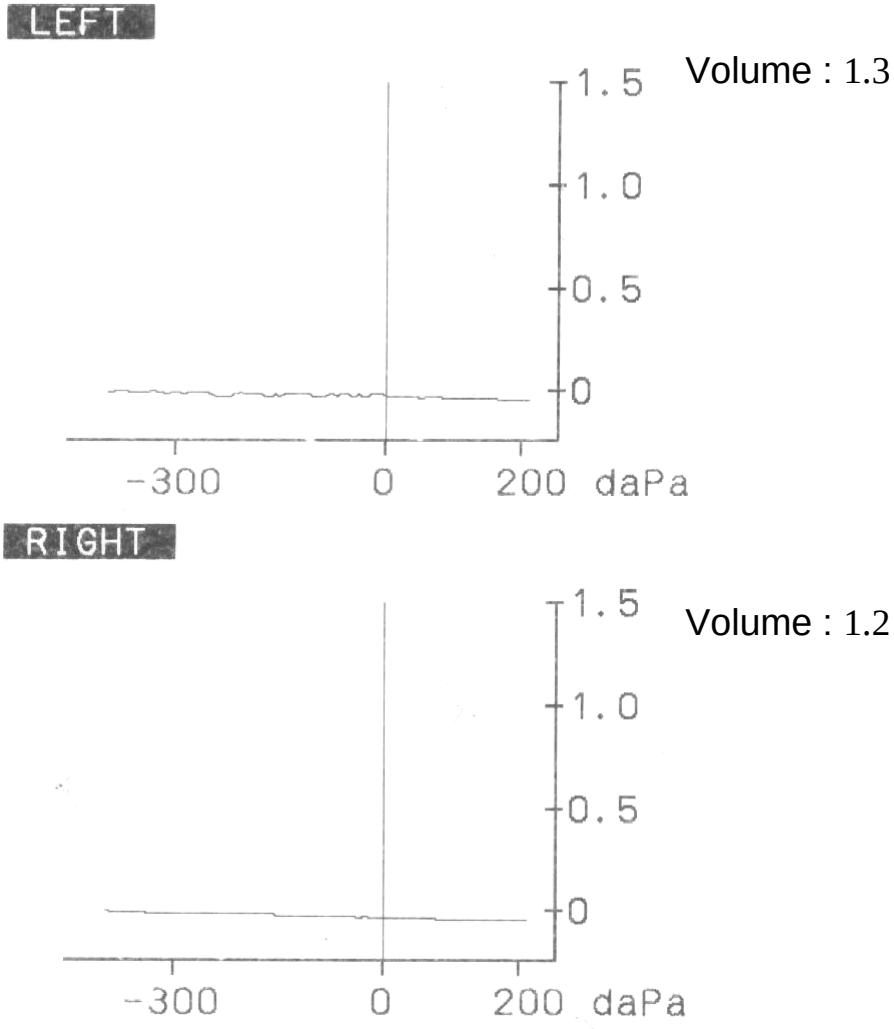


Fig (17-1)

Fig (18-1)Postoperative tympanometric physical volume follow up in the third month in group 2

Tympanogram

Name: Romassa Mahmoud

Age: 10 years

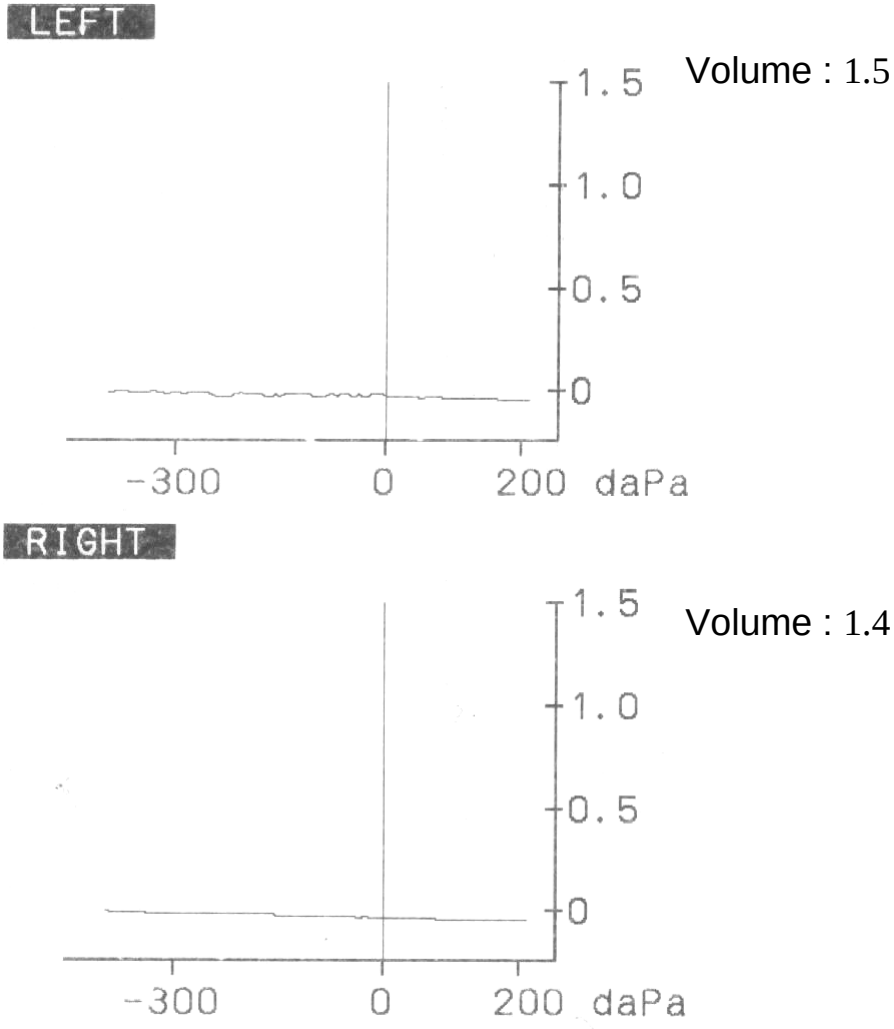


Fig (18-1)

Fig (19-1)Postoperative tympanometric physical volume follow up in 6 months in group 2

Tympanogram

Name: Romassa Mahmoud

Age: 8 years

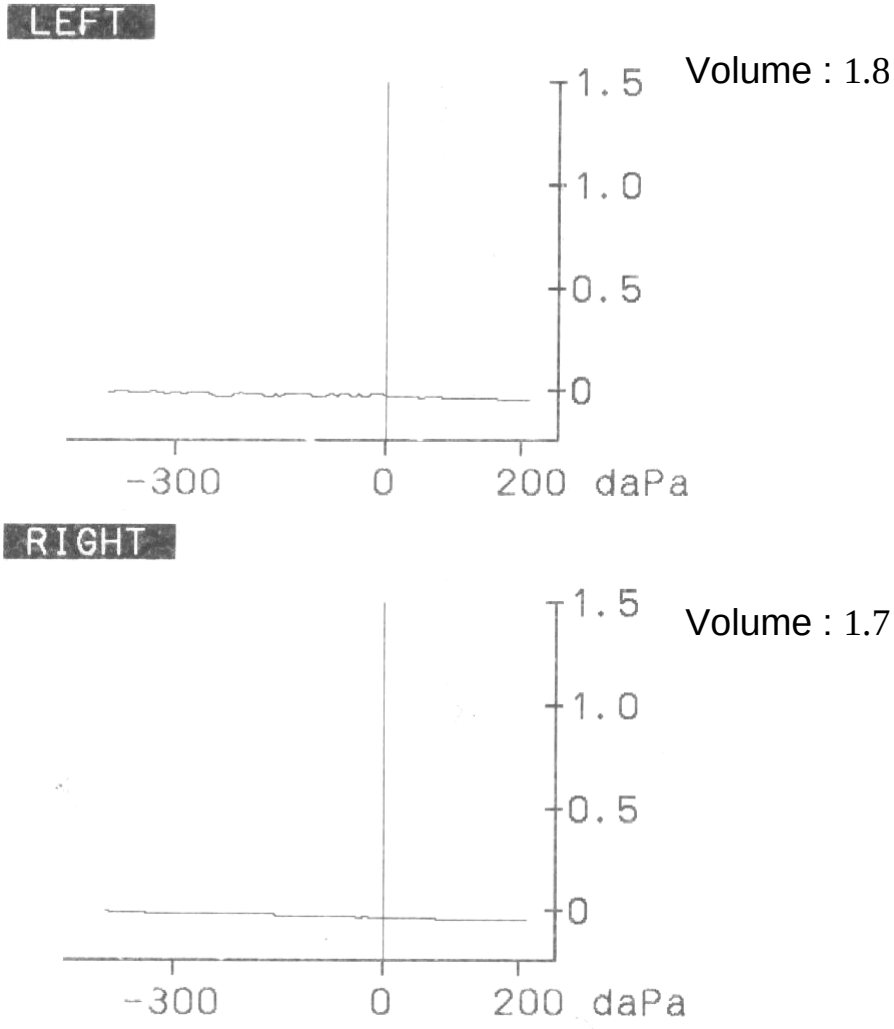


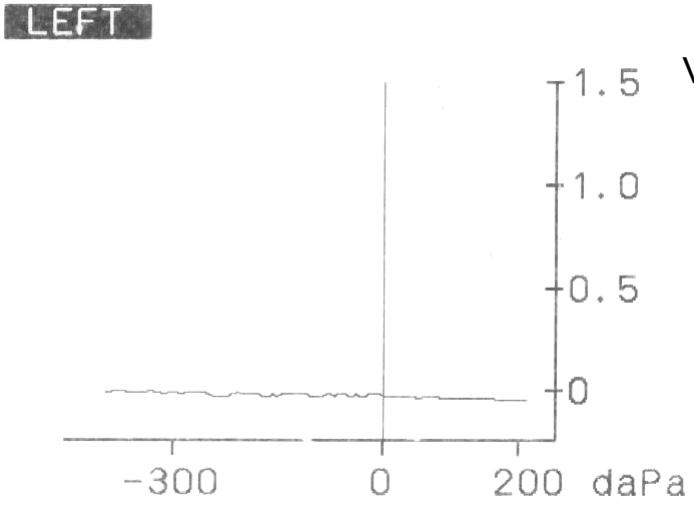
Fig (19-1)

Fig (20-1)Postoperative tympanometric physical volume follow up in the 1st week in group 3

Tympanogram

Name: Yasmin Ali

Age: 8 years



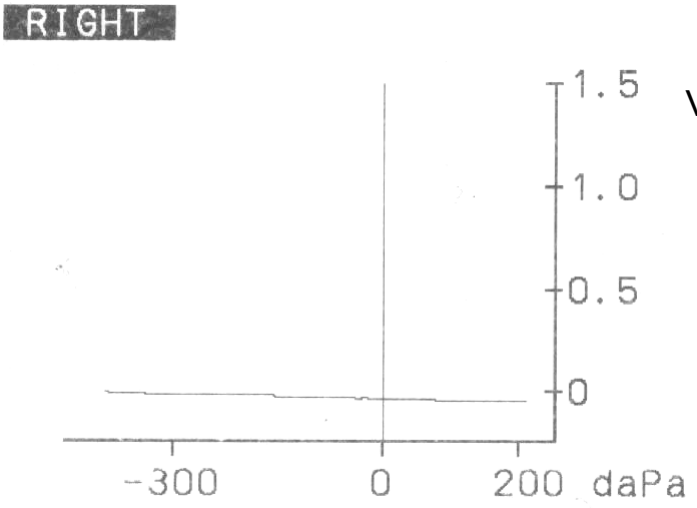


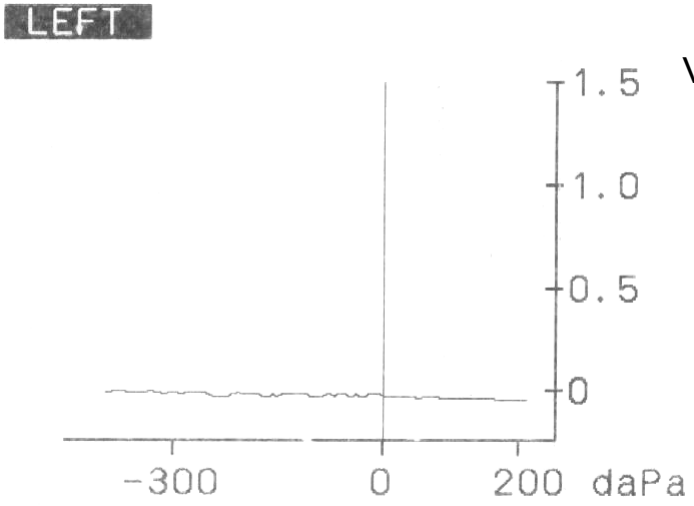
Fig (20-1)

Fig (21-1)Postoperative tympanometric physical volume follow up in the third month in group 3

Tympanogram

Name: Yasmin Ali

Age: 8 years



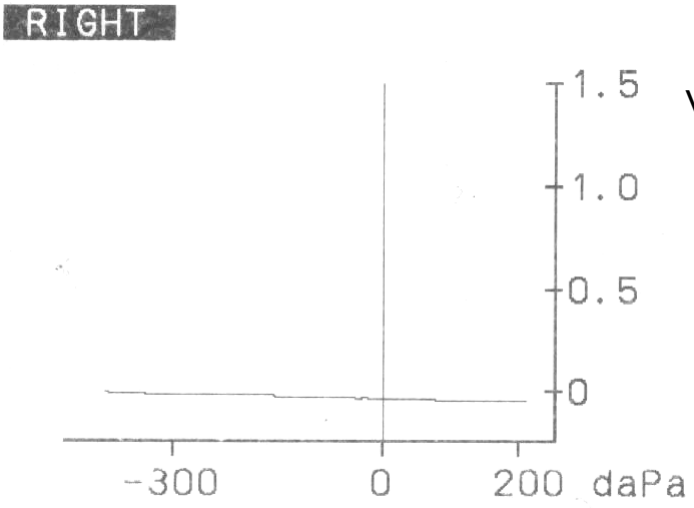


Fig (21-1)

Fig (22-1)Postoperative tympanometric physical volume follow up in 6 months in group 3

Tympanogram

Name: Yasmin Ali

Age: 8 years

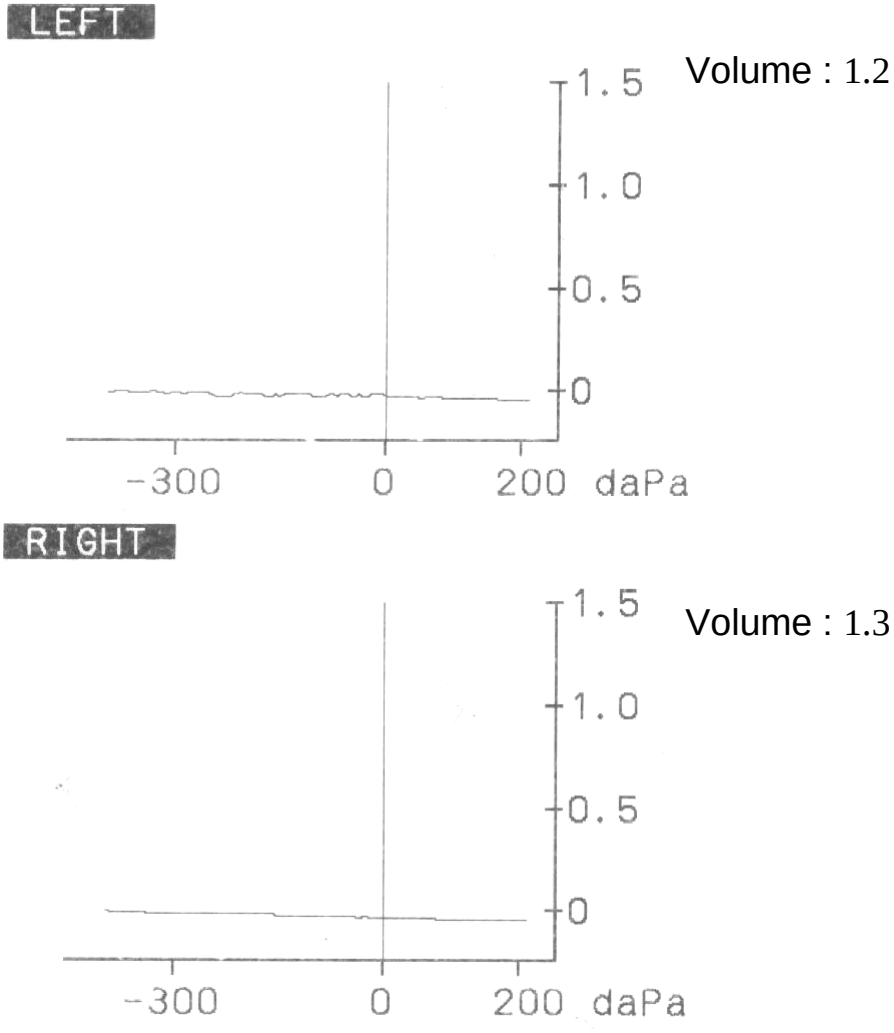


Fig (22-1)