RESULTS

(1) Basic charachteristics of the cases:

Ninety women were enrolled in the study. No one excluded out of the study once recruited. They were divided into 3 equal groups; oral, vaginal and sublingual, each of 30 cases. Regarding the initial Bishop Score and the basic data, there was no significant difference **(table 1).**

Table (1): Maternal basic characteristics (mean ± SD):

Study group / Variable	Oral (n=30) ±SD	Vaginal (n=30) ±SD	Sublingual (n=30) ±SD
Age (Y):	26.6 ± 5.2	27.9 ± 5.3	27.56 ± 5.11
Gest. Age (Wk):	39.76 ± 1.38	39.14 ± 1.57	38.64 ± 1.64
Bishop Score:	6.22 ± 0.74	6.1 ± 0.97	5.96 ± 0.97

Table (2): Distribution of primigravida and multigravida in each group:

Study group / Variable	Oral		Vaginal		Sublingual		Total	
	No	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Primigravida:	11	36.7	12	40.0	13	43.3	36	40.0
Multigravida:	19	63.3	18	60.0	17	56.7	54	60.0
Total:	30	100	30	100	30	100	90	100

Table (2) shows the distribution of primigravida and multigravida in the three groups; oral, vaginal and sublingual. The distribution shows no significant difference.

(2) Indications of induction of labor:

Table (3): Indications of induction of labor in each group:

Study group / Indications	Oral		Vaginal		Sublingual	
	N0	%	N0	%	N0	%
(1) PROM:	10	33.3	9	30.1	9	30.1
(2) Post – term:	10	33.3	11	36.8	12	40.0
(3) Hypertension:	5	16.7	4	13.3	5	16.7
(4) Diabetes:	2	6.7	3	10.0	0	0.0
(5) SGA:	1	3.3	1	3.3	2	6.7
(6) Oligohydramnios:	2	6.7	1	3.3	1	3.3
(7) LGA:	0	0.0	1	3.3	1	3.3
Total:	30	100.0	30	100.0	30	100.0

PROM: pre-labor rupture of membranes.
LGA: large for gestational age.
SGA: small for gestational age.

Table (3) shows for what indication we induced labor in the three groups. The number of cases of PROM in the three groups are almost the same, so the difference was statistically insignificant and making no difference in the net results.

(3) Mode of delivery in each group:

Table (4): Mode of delivery in each group:

Study group / Variable	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%
Modes of delivery:-						
• **Spontaneous:**	24	80.0	23	76.7	25	83.4
• **Instrumental:**	1	3.3	3	10.0	1	3.3
• **Cesarean sections:**	5	16.7	4	13.3	4	13.3

Table (4) shows the mode of delivery in the three groups; in oral group, there were 24 case delivered spontaneously per vagina, versus 23 and 25 cases in the vaginal and sublingual groups respectively. The difference between the three groups is statistically insignificant.

The instrumental (ventose) delivery in the oral group was one case due to maternal exhaustion, while in the vaginal group there were 3 cases of ventose delivery, 2 cases were diabetic mothers to shorten the 2nd stage of labor, the 3rd case was persistant occipito-posterior position. In sublingual group there was one case of ventose due to persistant occipito-posterior position. There was statistically significant increased rate of instrumental deliveries in the vaginal group than the oral and sublingual groups **(Fig. 1).**

The rates of C.S. in the three groups were 5 cases in the oral group, versus 4 cases in both vaginal and sublingual groups. Thus, making no statistically significant difference. The indications for C.S. in each group will be mentioned later.

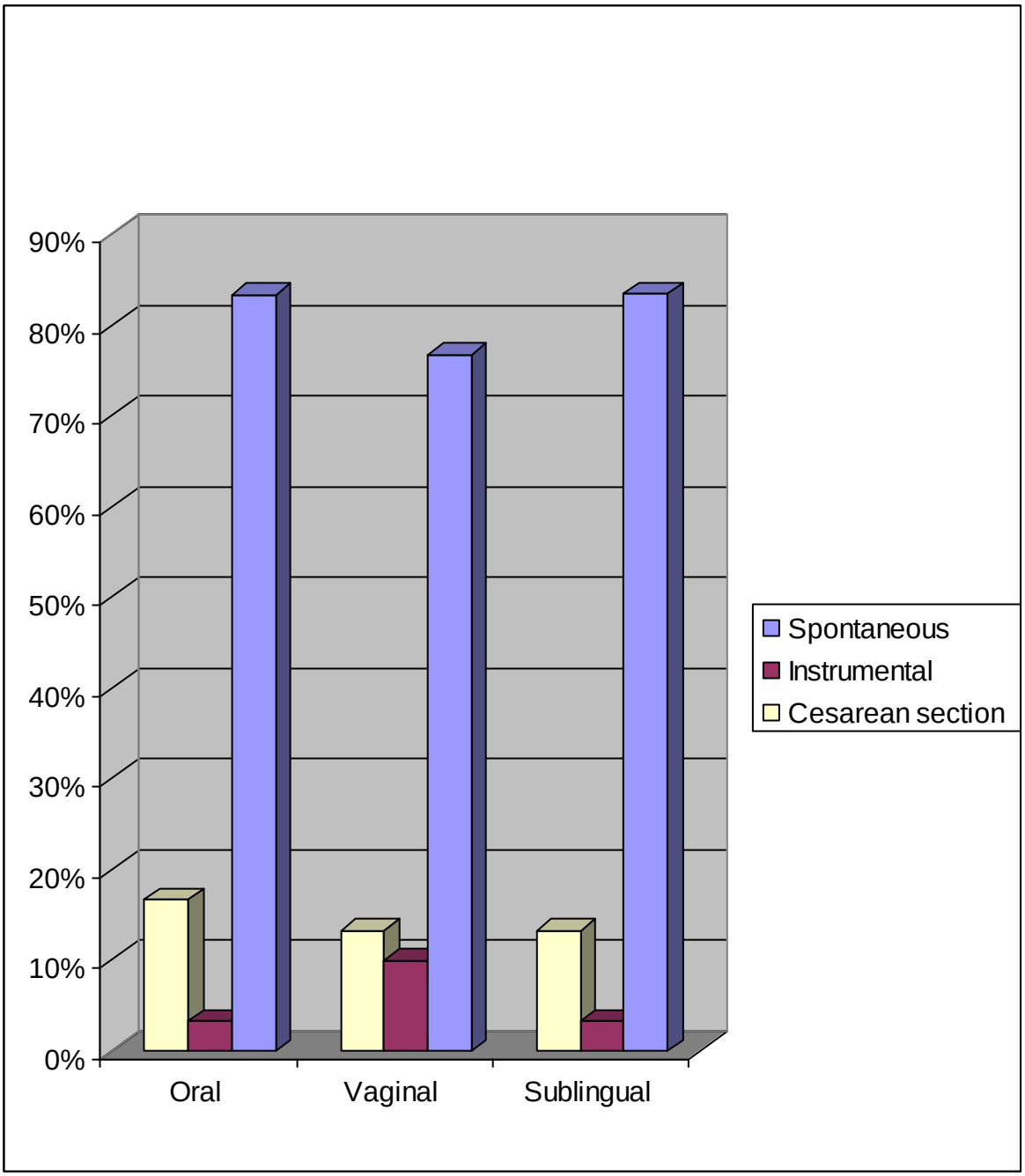

Fig. (1): The mode of delivery in each group.

(4) Induction-to-delivery interval:

Table (5): Means ± standard deviations (SD) of Induction-Delivery interval (h) in those delivered vaginally in each group:

Study group / Variable	Oral n=30	Vaginal n=30	Sublingual n=30	P
Induction- delivery interval (h):	18.8 ± 6	11.56 ± 5.46	12.54 ± 6	< 0.05 Sign.

Sign. : Significant.

Table (5) shows the difference in the ID interval between those delivered vaginally in the three groups, which is statistically significant increased in the oral group (18.8Hs), versus (11.56 and 12.54) in the vaginal and sublingual groups respectively **(Fig. 2).**

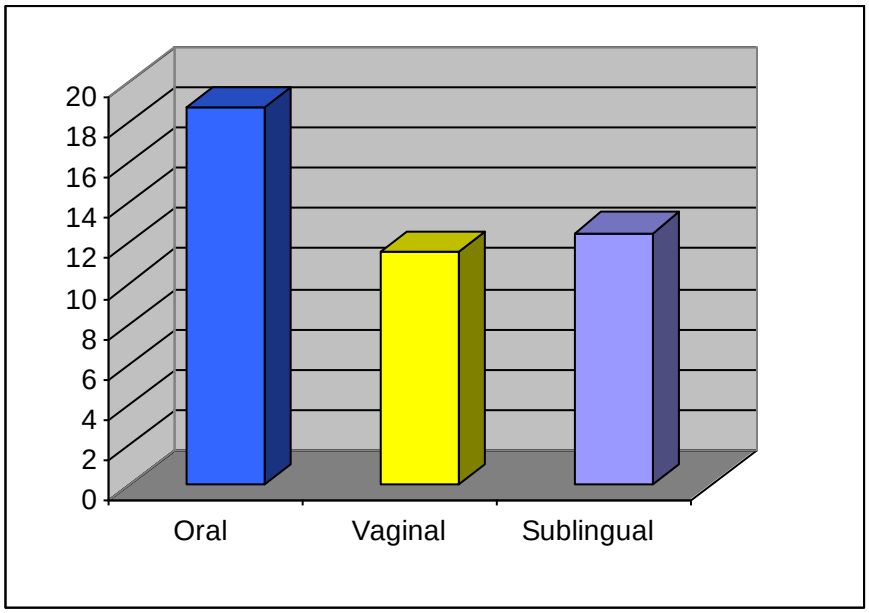

Fig. (2): Mean induction-to-delivery interval of each group (Hs).

(5) Number of misoprostol doses:

Table (6): Number of misoprostol doses given in each group:

Study group / Dose	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%	P
One:	1	3.3	22	73.3	14	46.7	Sign. (<0.05)
Two:	12	40.0	5	16.7	10	33.3	
Three:	11	36.7	3	10.0	5	16.7	
Four:	6	20.0	0	0.0	1	3.3	
Mean ± SD:	2.76 ± 0.8		1.38 ± 0.6		1.72 ± 0.81		

Sign. : Significant.

Table (6) shows the mean number of doses in oral, vaginal and sublingual groups which was 2.76 ± 0.8, 1.38 ± 0.6 and 72 ± 0.81 respectively. The mean oral misoprostol dose given was significantly greater than the mean sublingual dose and the mean sublingual dose was significantly greater than the mean vaginal dose ($P < 0.05$).

We find that the number of cases that needed just one dose of misoprostol to deliver vaginally were much greater in the vaginal group (22), then sublingual group (14), than oral group which was only one case.

(6) The use of oxytocin for augmentation:

Table (7): The use of oxytocin in each group:

Study group / Variable	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%
No. given oxytocin:	8	26.7	5	16.7	5	16.7

Table (7) shows that the number of women needing oxytocin augmentation in the oral arm was higher (but not significant) than the sublingual group 8 (26.7%) vs. 5 (16.7%) respectively. And no statistical difference between vaginal 5 (16.7%) and sublingual groups **(Fig. 3).**

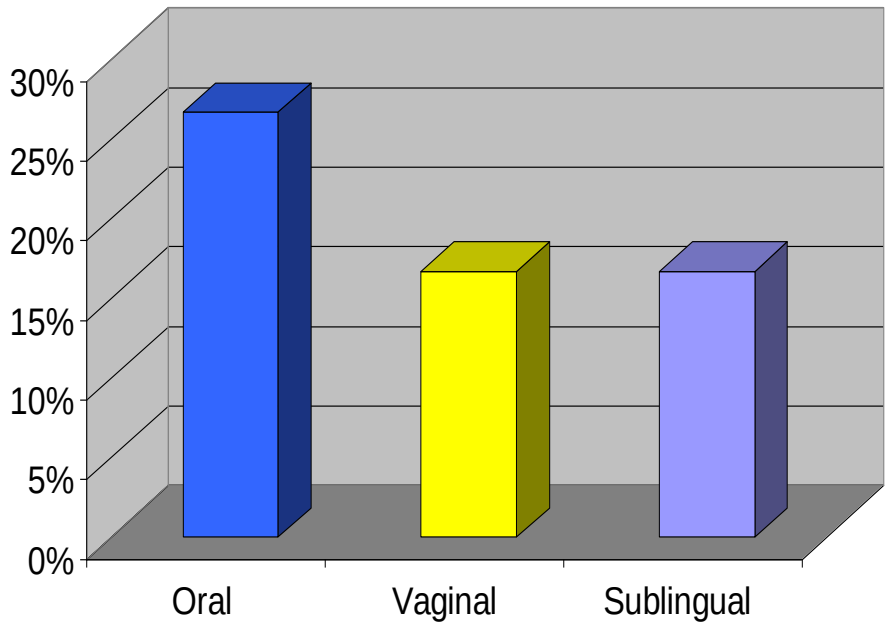

Fig. (3): Oxytocin administration in each group.

(7) Rates of side effects:

Table (8): The rate of side side effects of misoprostol in each group:

Study group / Variable	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%
• **Vomiting:**	2	6.7	2	6.7	3	10.0
• **Diarrhea:**	2	6.7	1	3.3	0	0.0
• **Fever:**	0	0.0	1	3.3	1	3.3
Total:	4	13.3	4	13.3	4	13.3

Regarding the rates of misoprostol side effects, we find that there is no significant difference between the three groups **(Table 8).**

(8) Rates of uterine hyperstimulation:

Table (9): The uterine hyperstimulation rates in each group:

Study group / Variable	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%
Uterine hyperstimulation:	1	3.3	3	10.0	1	3.3

Table (9) shows the rates of uterine hyperstimulation in the three groups, we record 3 cases of uterine hyperstimulation in the vaginal group, versus one case only in both oral and sublingual groups, that difference was significant **(Fig. 4).**

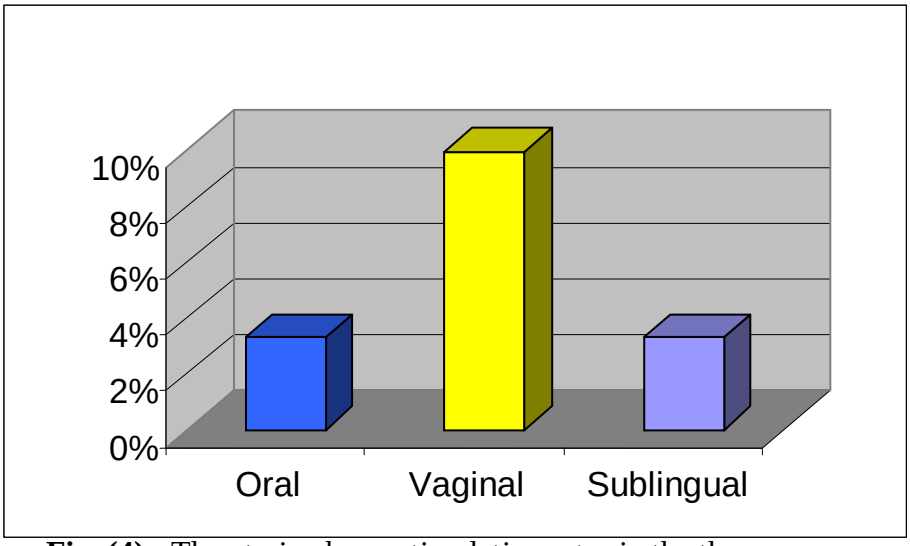

Fig. (4): The uterine hyperstimulation rates in the three groups.

(9) Pattern of uterine action in each group:

Table (10): Pattern of uterine action and its fate in each group:

Study group / Uterine action	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%
Normal:	29	96.7	27	90.0	29	96.7
Hyperstimulation:						
Hypertonus:-						
• **Relieved:**	0	0.0	0	0.0	0	0.0
• **C.S.:**	0	0.0	1	3.3	1	3.3
Tachysystole:-						
• **Relieved:**	1	3.3	1	3.3	0	0.0
• **C.S.:**	0	0.0	1	3.3	0	0.0
Total:-	1	3.3	3	10	1	3.3

Table (10) show the pattern of uterine action in each group as a result of administration of misoprostol, we record 3 cases of hyperstimulation In the vaginal group; **hypertonus** (prolonged uterine contractions > 2 min) occurred in 1 case, not corrected by left side positioning of the patient, hydration and IV ***Yutopar*® (Roberts et al, 1971)**, resulting in persistent fetal bradycardia, urgent cesarean section necessary. The remaining 2 cases of hyperstimulation in the vaginal group showed **tachysystole** (> 6 contractions per ten minutes); one was corrected by the previous measures and the other case required emergency C.S.

The hyperstimulation case in the sublingual group showed hypertonus and it didn't respond to positioning and hydration; delivered by emergent C.S.

In the oral group, there was only one case of tachysystole but relieved by the previous measures and continued to spontaneous vaginal delivery.

From this table we find that there is significant higher rate of uterine hyperstimulation among cases of vaginal group than oral and sublingual groups, while no difference between sublingual and oral groups in this aspect.

(10) Indications of cesarean sections:

Table (11): Indications of cesarean sections in each group:

Study group / Indication for C.S.	Oral (n = 30) No	Oral (n = 30) %	Vaginal (n=30) No	Vaginal (n=30) %	Sublingual (n = 30) No	Sublingual (n = 30) %
Fetal distress:	1	3.3	1	3.3	1	3.3
Failed induction:	3	10.0	0	0.0	2	6.7
Failed progress of labor:	0	0.0	3	10.0	1	3.3
APH:	1	3.3	0	0.0	0	0.0
Total:	5	16.7	4	13.3	4	13.3

APH: antepartum haemorrhage.

As regards the indications or C.S in the three groups; **table (11)** shows that, in the oral group (5 cases): 3 cases were due to failed induction, one case due to persistent multiple late decelerations in FHR late in the first stage of labor and the last case was due to APH.

In the vaginal group (4 cases): one case delivered by C.S. because of fetal distress associated with hyperstimulation and 3 cases were due to failed progress of labor, one of them accompanied with uterine hyperstimulation.

In the sublingual group (4 cases), one case of fetal distress due to hyperstimulation and another one due to failed progress of labor, while the indication for C.S. of the other 2 cases were due to failed induction.

There was no significant difference in the indications of cesarean section for fetal concern.

(11) Neonatal outcome:

Table (12): 1 and 5 Apgar Score in each group:

Study group / Apgar Score	Oral (n = 30) Mean ± SD	Vaginal (n=30) Mean ± SD	Sublingual (n = 30) Mean ± SD
At 1 minute:	6.44 ± 1.09	6.40 ± 1.42	6.64 ± 1.00
At 5 minutes:	8.84 ± 0.99	8.80 ± 1.30	8.94 ± 0.94
Mean difference ±SD difference:	2.40 ±1.0	2.40±0.12	2.30±0.06

Table (12) shows that there was non–significant difference among the three groups as regard to 1 and 5 minute Apgar Score.

Table (13): The need for neonatal admission at NICU in each group:

Study group / Outcome	Oral (n = 30) No	%	Vaginal (n=30) No	%	Sublingual (n = 30) No	%
Neonatal ICU Admission:	4	13.3	4	13.3	3	10.0

Table (13) shows that, there was non-significant difference in neonatal outcomes among the three groups: in the oral group; 4 infants were admitted to NICU; two because of diabetic mother (hypoglycemia), the other two because of tachypnea.

In the vaginal group; 4 infants were admitted to NICU, 2 because of tachypnea of newborn and 2 infants due to diabetic mother (hypoglycemia).

In the sublingual group; three infants admitted to NICU, one because of difficult delivery and shoulder dystocia, one for diabetic mother and poor feeding. And last one with cyanotic attacks on crying were admitted too and diagnosed later as having congenital heart diseases **(Fig. 5).**

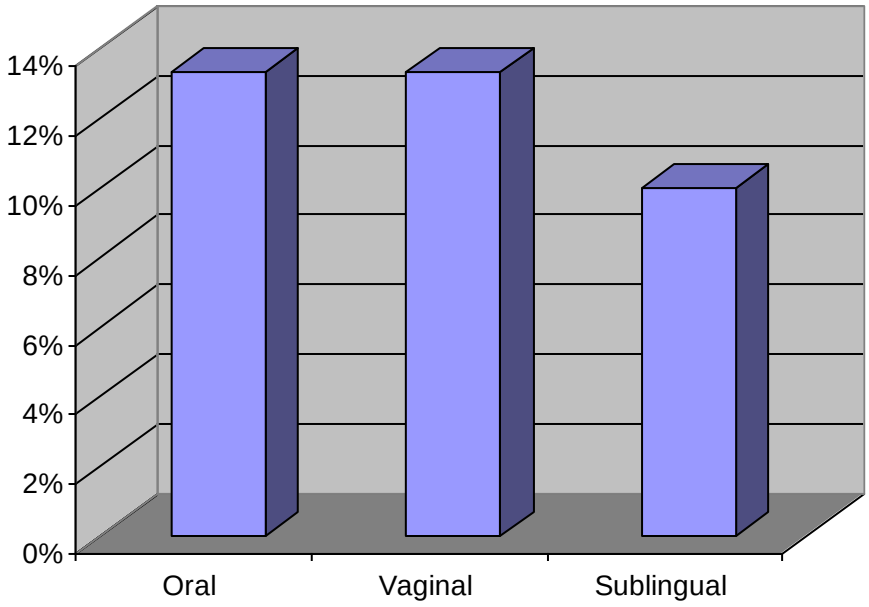

Fig. (5): NICU admission in each group.