Results

This study was done in Etay Elbaroud General Hospital, during the period from November 2010 to April 2011, it included 120 patients who had various indications for induction of labor. From the 120 cases 87 cases delivered vaginally and 33 cases had cesarean section as a result of failure of progress. All newborns were in good health and no serious complications occurred.

A) The patient population was also divided into two groups according to Bishop score detected clinically into:

1- Patients with Bishop score < 5.
2- Patients with Bishop score $\geq$ 5.

B) Patients were divided into two groups according to cervical length detected by transvaginal ultrasound into:

1- Patients with cervical length $\leq$30 mm.
2- Patients with cervical length > 30mm.

Table (10) shows the demographic characteristic of patients with Bishop score <5, patients with Bishop score $\geq$5. It proved that age, parity fetal weight are comparable P.value (>0.05).

Table (10): Age, parity of studied women and fetal birth weight in relation to Bishop score

Bishop score	**<5**	**>5**	**p. value**
Age	24.63$\pm$4.32	23.52$\pm$3.52	>0.05
Parity	3.65$\pm$0.53	3.11$\pm$0.64	>0.05
Fetal weight	3.41$\pm$0.745	3.22$\pm$0.352	>0.05

Among the 88 patients with Bishop score ≥5 80(90.9%) delivered vaginally and 8(9.1%) delivered by CS (table 11, fig. 6).

Table (11): Bishop score ≥5 in relation to mode of delivery

Bishop score ≥5 (N=88)	**Success Induction Vaginal .D**	**Filed induction C.S**
N	**80(90.9%)**	**8(9.1%)**

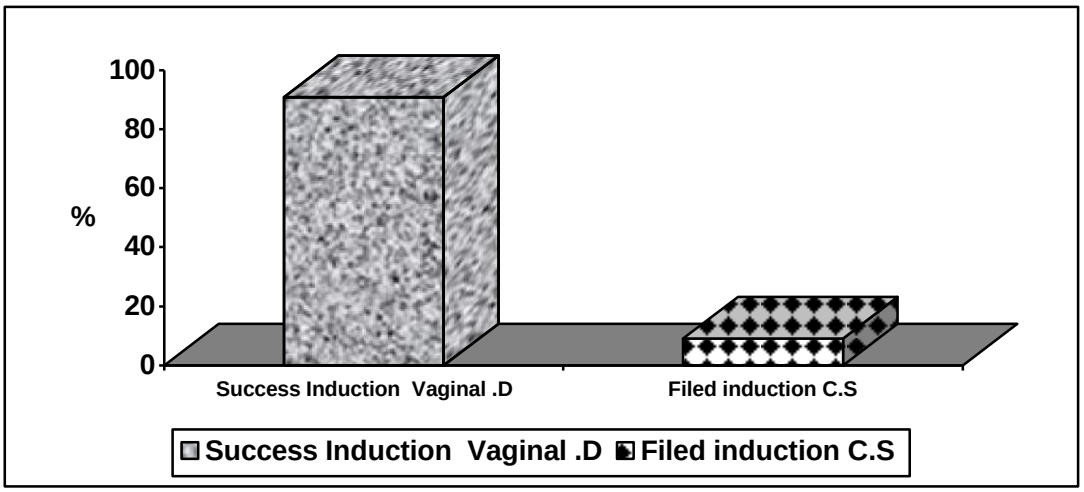


Fig. (6): Bishop score ≥5 in relation to mode of delivery

Out of 120 patients studied, 32 were found to have Bisphop score <5, 5 (15.6%) cases delivered vaginally and 27 (84.4%) cases delivered by CS (table 12, fig. 7).

Table (12): Bishop score <5 in relation to mode of delivery

Bishop score <5 (N=32)	**Success Induction Vaginal .D**	**Filed induction C.S**
N	**5(15.6%)**	**27(84.4%)**

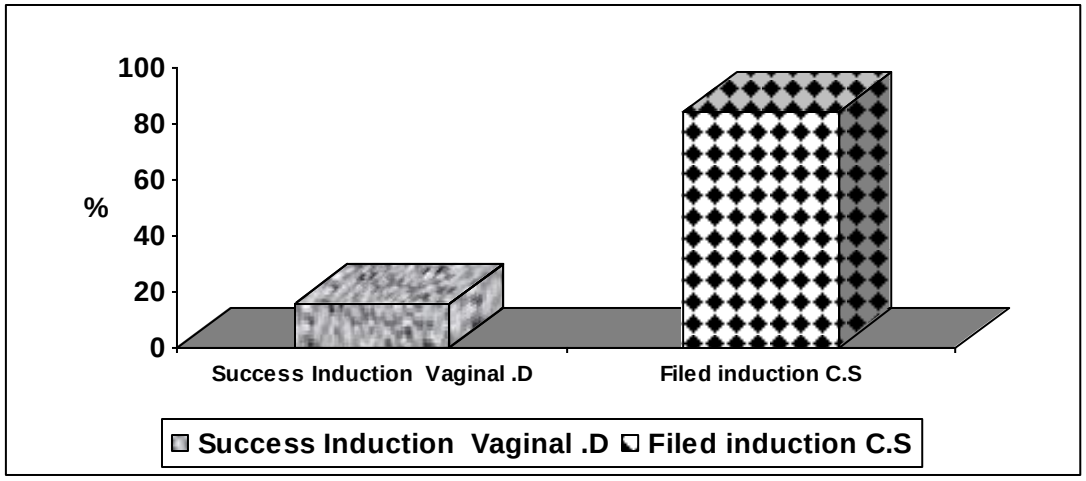


Fig. (7): Bishop score <5 in relation to mode of delivery

Table (13) show that 120 patients, 32 cases have Bishop score <5 5(15.6%) delivered vaginally. From the other 88 cases 80(90.9%) delivered vaginally.

Table (13): Bishop score in relations to mode of delivery

Bishop score	<5 N=32	≥5 N=88	p. value
Success Induction Vaginal .D	**5(15.6%)**	**80(90.9%)**	**<0.001**

Table (14) showed that sensitivity, specificity with predictive value of the Bishop score of a good predictive value in prediction of successful labor indication.

Table (14): Sensitivity, specificity, +ve predictive value and –ve predicative value of Bishop score

	Bishop score
Sensitivity	94.1
Specificity	77.1
+ve predictive value	90.9
-ve predictive value	84.3

Table (15) shows the demographic distribution of age, parity and fetal weight in patients with cervical length ≤30mm and patients with cervical length >30mm P.value (>0.05).

Table (15): Age, parity of studied women and fetal birth weight in relation to cervical length

Cervical length	>30 mm	≤30 mm	p. value
Age	23.98±3.66	24.11±4.23	>0.05
Parity	3.24±0.35	3.25±0.47	>0.05
Fetal weight	3.10±0.53	3.35±0.65	>0.05

Out of 120 patients studied, 75 were found to have cervical length ≤ 30 mm detected by transvaginal ultrasound, 59 (78.7%) of these patients delivered vaginally and 16 (21.3%) cases delivered by CS (table 16, fig. 8). The remaining 45 cases in whom cervical length was >30 mm only 30 (66.6%) cases delivered vaginally and 15 (33.3%) cases delivered by CS, 7 cases of them didn't achive active phase of labor table (17), fig. (9).

Table (16): Cervical length ≤30mm in relation to mode of delivery

Cervical length ≤30mm (n= 75)	Success Induction Vaginal .D	Filed induction C.S
N	**59(78.7%)**	**16(21.3%)**

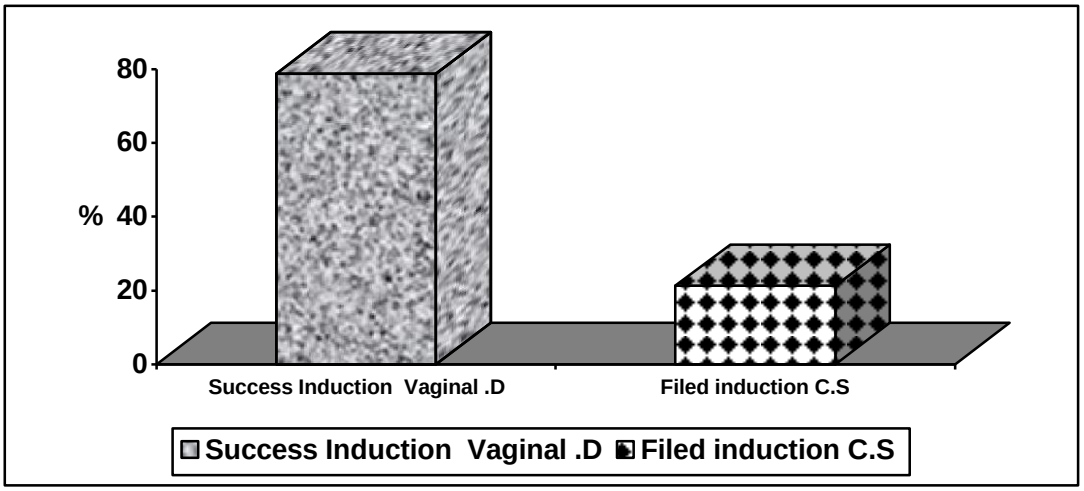


Fig. (8): Cervical length ≤30mm in relation to mode of delivery

Table (17): Cervical length >30mm in relation to mode of delivery

Cervical length >30mm (n= 45)	Success Induction Vaginal .D	Filed induction C.S
N	**30(66.7%)**	**15(33.3%)**

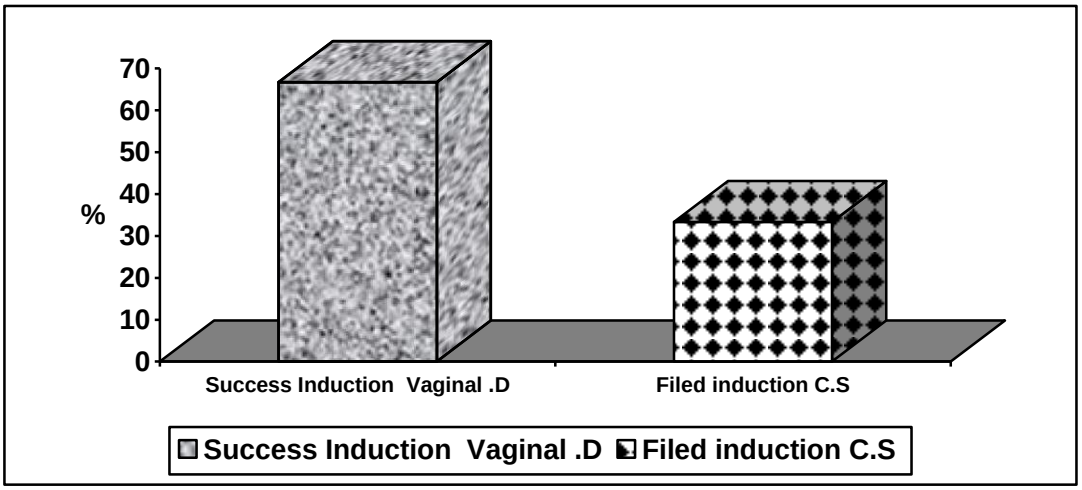


Fig. (9): Cervical length >30mm in relation to mode of delivery

Table (18): show that out of 120 cases, 75 were found to have cervical length ≤ 30 mm detected by transvaginal, ultrasound 59 cases (78.7%) delivered vaginally. From the other 45 cases, in whom cervical length was >30 mm, 30(66.7%) delivered vaginally.

Table (18): Cervical length in relation to mode of delivery

Cervical length	≤30m N=75	>30m N=45	p. value
Success Induction Vaginal .D	**59(78.7%)**	**30(66.7%)**	**<0.05**

Table (19): Sensitivity, specificity, +ve predictive value and –ve predicative value of cervical length

	Cervical length
Sensitivity	79.7
Specificity	34.7
+ve predictive value	66.3
-ve predictive value	51.6

This test is off good predictive value

Out of 120 patients studied, 75 were found to have cervical length ≤ 30 mm detected by transvaginal ultrasound, 62 (82.7%) of these patients have Bishop Score ≥5 mm and 12 (17.3%) cases have Bishop Score <5 mm . from the other 45 cases in whom cervical length was >30 mm only 21 (46.7%) cases have Bishop Score ≥5 mm and 24 (53.3%) cases have Bishop Score <5 mm table (20), fig. (10).

The relationship between cervical length is inverse proportion with bishop score.

Table (20): Show the relationship between cervical length and bishop score

No / Bishop score	Cervical length			
	≤30mm (N=75)		>30mm (N=45)	
	N	%	N	%
≥5	62	82.7	21	46.7
<5	13	17.3	24	53.3

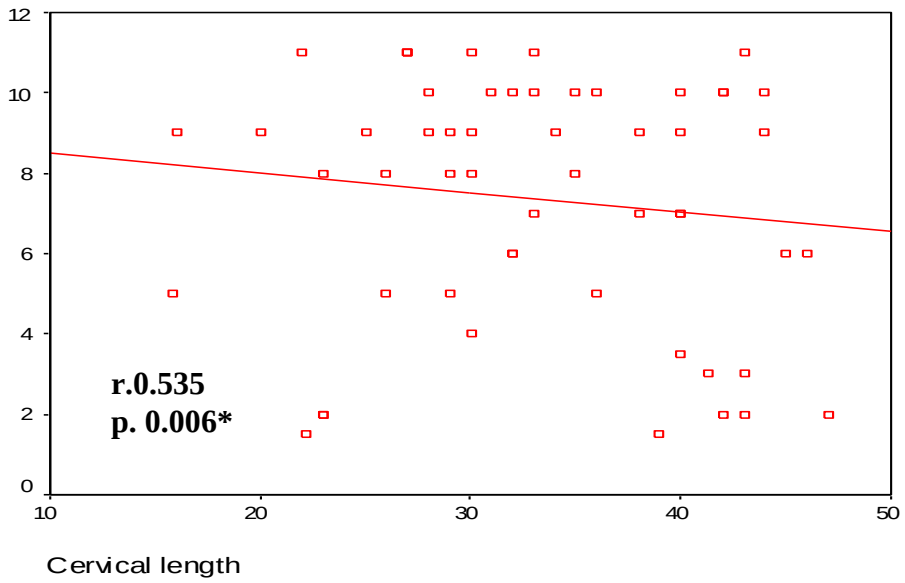


Fig. (10): Correlation between cervical length and Bishop Score

Cervical length in prediction of vaginal delivery when bishop score is ≥5, where 82.5 of cases delivered vaginally when cervical length is ≤ 30 mm, and 85.7% of cases delivered vaginally when cervical length is >30 mm. non significant P.value (>0.05) Table (21) and fig. (11).

Table (21): Cervical length in relation to mode of delivery among cases with bishop >5

Mode of delivery of bishop score ≥5	Cervical length				P. value
	≤30mm (n= 63)		>30mm (n= 21)		
	N	%	N	%	
Vaginal .D	52	82.5	18	85.7	**>0.05 NS**
C.S	11	17.5	3	14.3	**>0.05 NS**

p. value >0.05 non significant

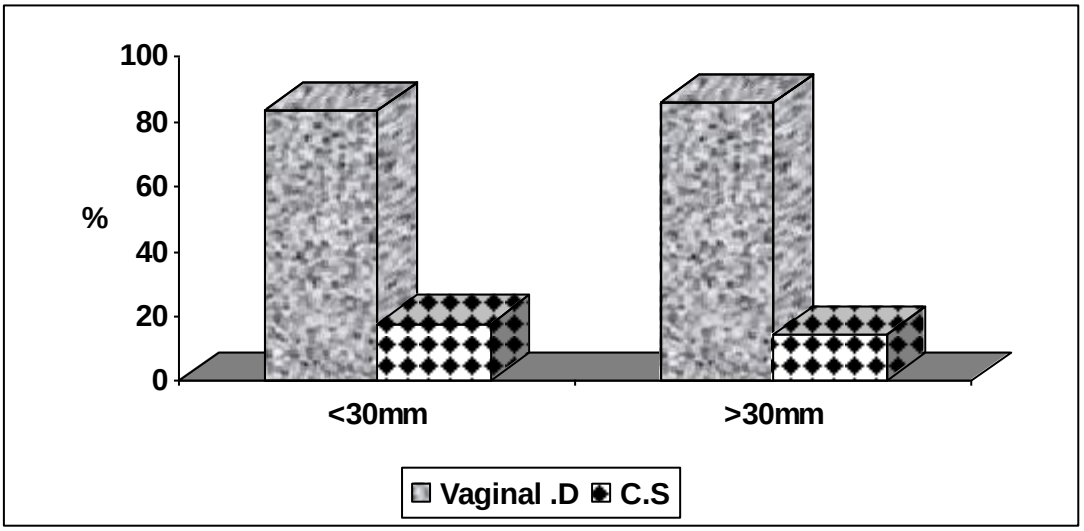


Fig. (11): Cervical length in relation to mode of delivery among cases with bishop >5

Cervical length is a significant predictor of mode of delivery among cases with Bishop <5, where 83.3% of cases delivered vaginally when cervical length is ≤30 mm against 79.2% of cases delivered by cesarean section when cervical length is >30mm. P.value (<0.05) Table (22) and fig. (12).

Table (22): Cervical length in relation to mode of delivery among cases with bishop <5

Mode of delivery of bishop score <5	**Cervical length**				**P. value**
	<30mm (n= 12)		**>30mm (n= 24)**		
	N	%	N	%	
Vaginal .D	10	83.3	5	20.8	**<0.05***
C.S	2	16.7	19	79.2	**<0.05***

Significant p. value <0.05

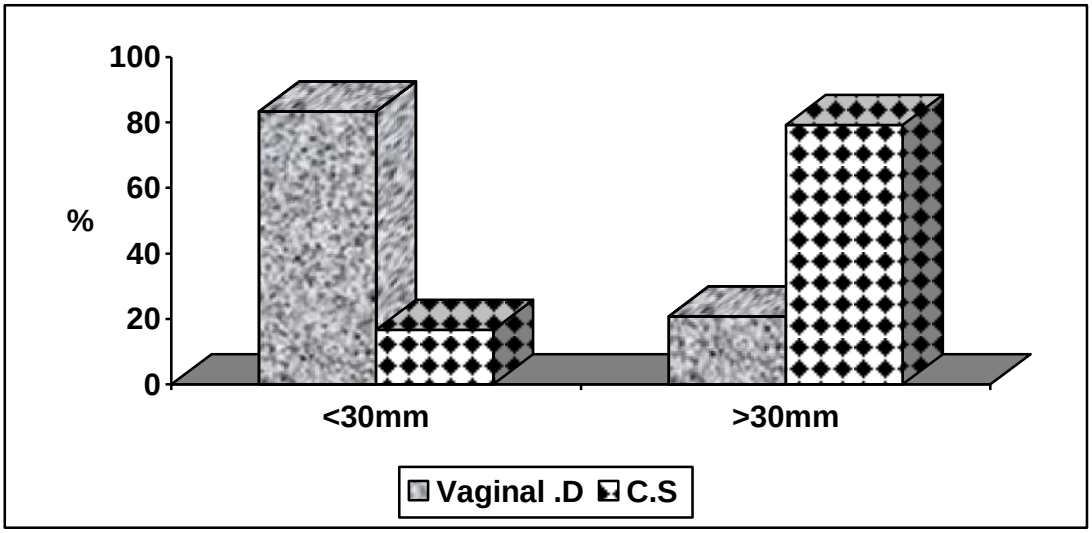


Fig. (12): Cervical length in relation to mode of delivery among cases with Bishop <5.

The mode of delivery was not significantly affected by presence of absence of cervical funnling detected by trnasvaginal ultrasound (table (23), fig. (13)).

Table (23): Relationship between presence of cervical funnling and mode of delivery

Mode of delivery	Funnling				P. value
	Present (n= 32)		Absent (n= 88)		
	N	%	N	%	
Vaginal delivery	25	78.1	72	81.8	**>0.05**
Cesarean section	7	21.9	16	18.2	

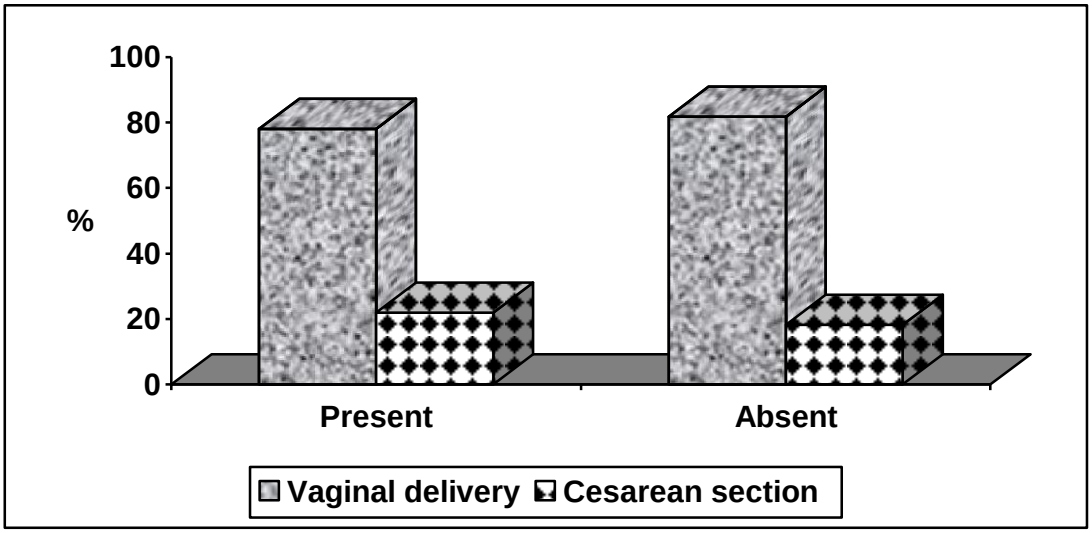


Fig. (13): Effect of presence or absence of funnling on mode of delivery

Table (24) and fig. (14) show that there was no significant effect of presence of funnling on latent phase duration but there was significant association between presence of funnling and short cervix.

Table (24) Relationship between presence of cervical funnling and (latent phase – cervical length)

	Funnling				P. value
	Present		Absent		
	Mean	±SD	Mean	±SD	
Latent phase(hours)	13.63	3.22	11.82	5.31	**<0.05**
Cervical length (mm)	33.96	9.52	27.96	7.64	**<0.05**

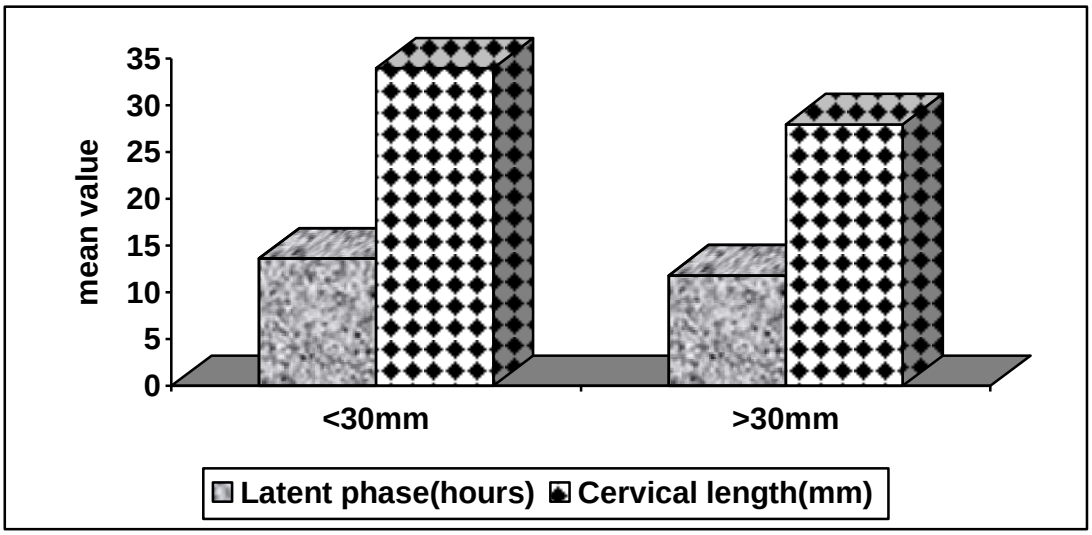


Fig. (14): Relationship between presence of cervical funneling and (latent phase- cervical length)

Bishop score ≥5 had a significant shorter duration of latent phase of induction, 1st stage of labor and total time of induction than those with Bishop score <5. P.value (<0.05) (table (25) and fig. (15)).

Table (25): Periods of induction of labor in relation to Bishop score in cases of vaginal delivery

Stage of labor	Bishop score				P. value
	<5		≥5		
	Mean	±SD	Mean	±SD	
Latent stage(hours)	13.63	5.31	11.82	3.22	**<0.05***
First stage(hours)	6.11	3.52	8.94	1.75	**<0.05***
Total time (hours)	20.53	9.32	22.87	5.63	**<0.05***

Significant p. value <0.05

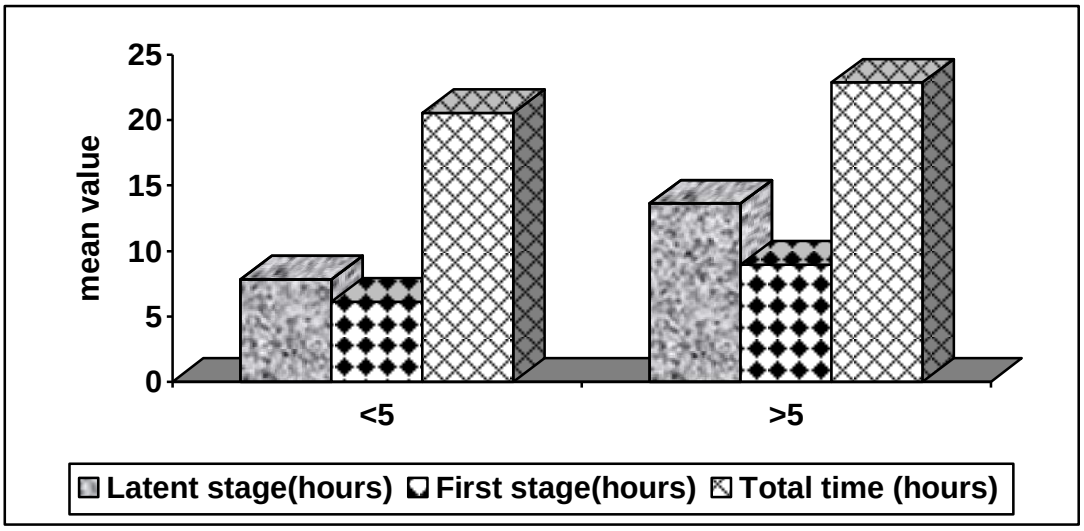


Fig. (15): Periods of induction of labor in relation to Bishop score in cases of vaginal delivery

Cervical length <30 mm had a highly significant shorter duration of latent phase of induction, 1st stage of labor and time of induction to delivery interval than those who had cervical length >30mm. P.value (<0.05) (table (26) and fig. (16)).

Table (26): Periods of induction of labor in relation to cervical length in cases of vaginal delivery

Stage of labor	Cervical length				P. value
	≤30		>30		
	Mean	±SD	Mean	±SD	
Latent stage(hours)	7.22	3.85	13.20	2.38	**<0.05***
First stage(hours)	6.39	2.94	7.80	3.84	**>0.05**
Total time (hours)	15.62	8.63	22.30	6.70	**>0.05**

Significant p. value <0.05

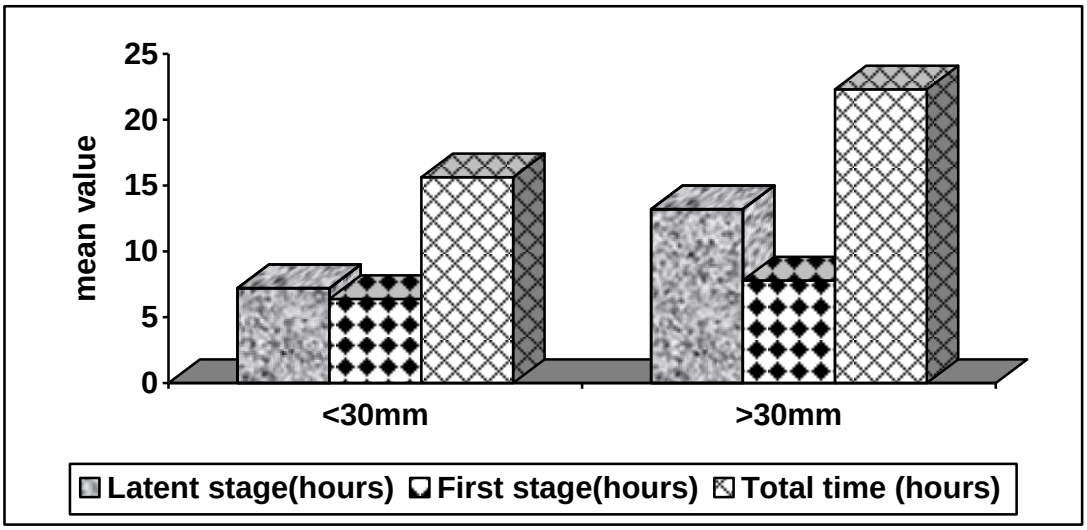


Fig. (16): Periods of induction in relation to cervical length in case of vaginal delivery

This study showed that vaginal ultrasound assessment of cervical length is less painful than the Bishop score (table 27, fig. 17).

Table (27): Pain in relation to Bishop score and cervical length

	Painful **No of cases**	**Non Painful** **No of cases**
Bishop score	97 (80.8%)	23 (19.2%)
Cervical length	18 (15%)	102 (85%)

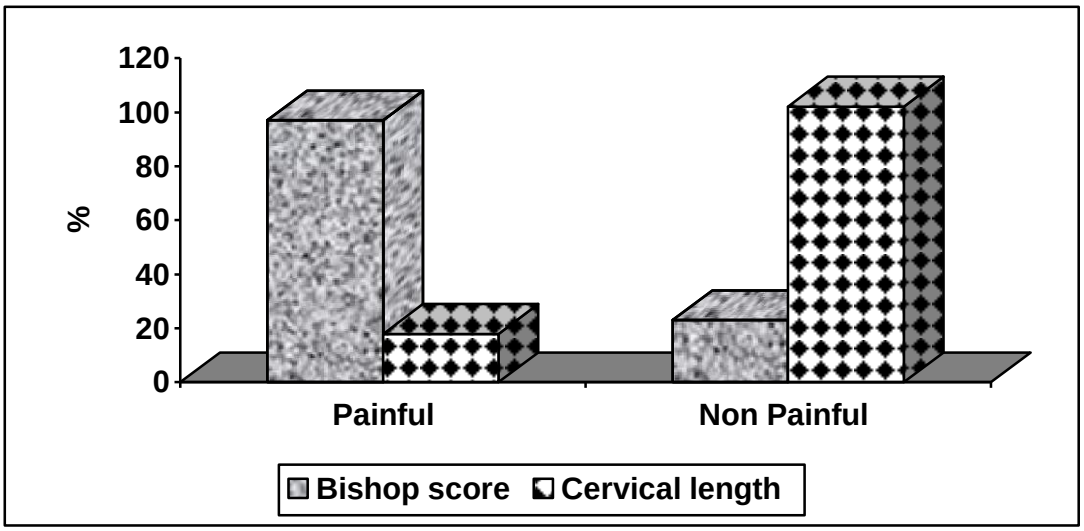
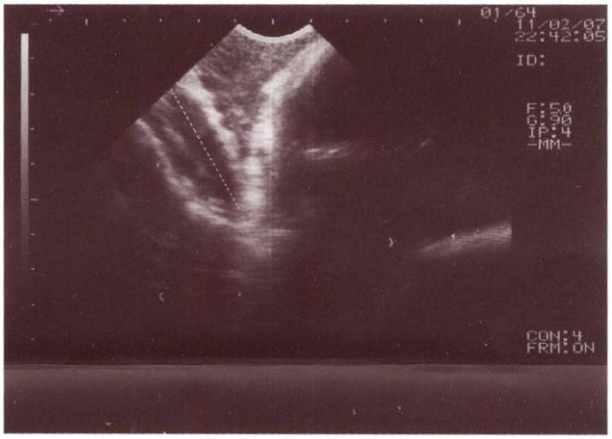
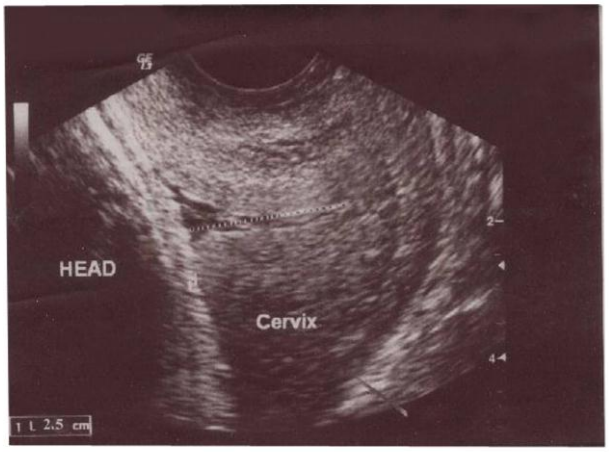


Fig. (17): Pain in relation to Bishop score and cervical length

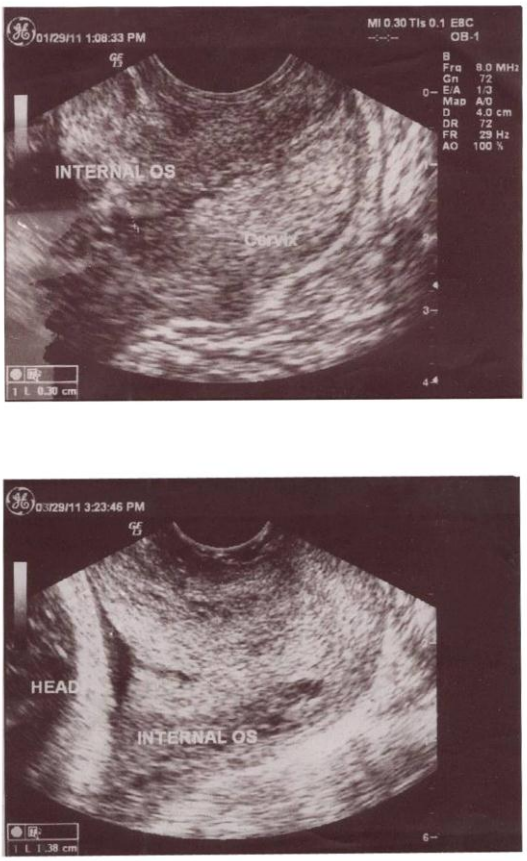
Fig(18):Shows Funnling of the cervix in one of our patients





Fig(19):Shows Closed internal os and cervical length 25mm in one of our patients

Fig(20):Shows cervical length 30mm in one of our patients



Fig(21): Shows cervical length 38mm in one of our patients