

OUR EXPERIENCE WITH THE VERSATILE HAY'S FORCEPS - I — A PROSPECTIVE EVALUATION OF 70 CASES

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SUMMARY

A prospective evaluation of 70 forceps deliveries using the recently devised Hay's flexion rotation obstetric forceps was done. Applications were performed for a variety of indications and included 37% outlet, 36% midcavity with 17% rotation forceps and 14% applications for the aftercoming head testifying versatility. A significant finding was instrument safety relative to neonatal outcome.

Introduction

The Hay's forceps was developed in five stages over twenty years by Dr. David Hay of Manchester. The resultant instrument is versatile in application with a wide margin of safety relevant to contemporary practice.

The purpose of this paper is to describe the Hay's forceps and share our experiences with it.

Material and Methods

Most of the Hay's forceps deliveries were performed by resident medical staff over a two year period. Every case had a prospective evaluation recorded.

Our study was largely a part of the Western Indian trial of the forceps con-

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ducted by Dr. Subhash Nargolkar for the Medico-Surgical Equipment Committee of FOGSI.

Description and method of application

The forceps is manufactured by Charles Thackeray & Co. of Leeds. As seen in Fig.1 the striking features of the instrument are the spring steel anodised blades with a negated pelvic curve; parallel branches and the secure spud in groove sliding lock on aluminium handles. Thus the instrument incorporates new innovations with established features.

The delicate blades allow easy direct insertion. For rotation the anterior blade is wandered into place and the posterior blade is inserted directly and a proper cephalic application confirmed. Rotation is performed in the same pelvic plane with a shortened forceps.

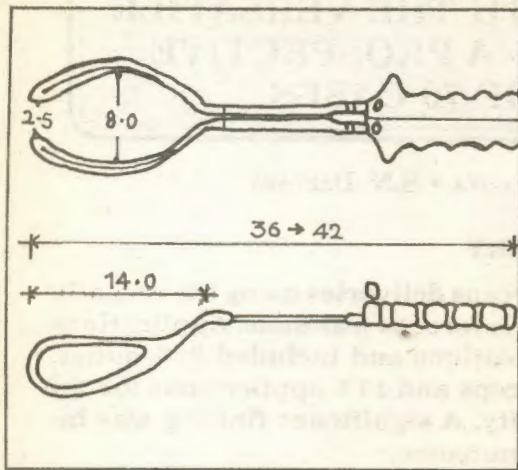


Fig. 1

Hey's flexion rotation obstetric forceps

Since all dimensions are less than Rhodes' recommendations it gives a good fit for small babies, the parallel branches allowing for adjustment according to head size while precluding compression. The negative pelvic curve facilitates rotation and delivery of the face and aftercoming head (Douglas and Stromme 1975).

The flattened shanks and short to long conversion from 36 to 42 cms. provide a spring bending potential, flexing the

fetal head and shortening the presenting diameter.

Results and Analysis

Subject distribution

A cross section of cases were delivered as shown in Table I. Primigravidae accounted for 64.3% cases.

Indications for forceps application

Table II lists the variety of indications for which the forceps was used. Besides established indications such as prolonged second stage and fetal distress, the same instrument was used for rotation (17%), delivery of the aftercoming head (14.3%) and at caesarian section to deliver an aftercoming head (5.7%) and a floating head (4.3%).

Types of forceps application

Table III by listing diverse obstetric applications reflects the versatility of the instrument. The forceps adapts equally well to outlet applications (37%) and midcavity applications (35.7%) with 14.3% basic and 3% major rotations. Other applications were for the aftercoming head, at caesarean section and for face to pubis delivery.

TABLE - I
SUBJECT DISTRIBUTION BY AGE AND OBSTETRIC STATUS.

	Primigravidae		Multiparae		Total	
	Percent	No.	Percent	No.	Percent	No.
Under 19 years	2.9	2	—	—	2.9	2
20 to 29 years	58.6	41	27.1	19	85.7	60
Above 30 years	2.9	2	8.6	6	11.4	8
	64.3	45	35.7	25	100.0	70

TABLE - II
INDICATIONS FOR HAY'S FORCEPS APPLICATION

Indications	Percent	No.
Prolonged second stage	28.6	20
Fetal distress	22.9	16
Forceps rotation	17.1	12
Aftercoming head	14.3	10
At caesarean section	10.0	7
Aftercoming head	5.7	4
Floating head	4.3	3
Prophylactic forceps	8.6	6
Medical disorders	7.1	5
Prematurity	5.7	4
Maternal distress	4.3	3
Trial forceps	4.3	3
Occipito sacral position	4.3	3
Face presentation	1.4	1

TABLE - III
TYPES OF HAY'S FORCEPS APPLICATION

Types	Percent	No.
Outlet forceps	37.1	26
Midcavity forceps	35.7	25
Basic rotation	14.3	10
Major rotation	2.9	2
Aftercoming head	14.3	10
Caesarean section	10.0	7
Face to pubis	4.3	3
Face presentation	1.4	1

Technical details of forceps application

The standard prerequisites for forceps use were applied. Pudendal anaesthesia was used in 9.5% of vaginal deliveries, the balance performed under perineal infiltration alone. The ease of application and extraction were assessed to be satisfactory in 95.7% and 94.3% respectively.

The two failed forceps followed difficult applications, both cases later underwent caesarean section.

Maternal morbidity

As seen in Table IV there were 5 episiotomy extensions, 3 vaginal tears, 2 perineal tears and cervical tear in the 63 cases delivered vaginally, an overall complication rate of 11.4%.

TABLE - IV
ASSOCIATED MATERNAL MORBIDITY

Maternal morbidity	Percent	No.
Episiotomy-extension	7.1	5
Vaginal tear	4.3	3
Perineal tear	2.9	2
Cervical tear	1.4	1

Neonatal outcome and Apgar scores

There were no fetal injuries other than residual marks left by the blade tips in 11.4% all of which resolved spontaneously as seen in Table V. The single perinatal mortality occurred due to meconium aspiration with postdatism.

TABLE - V
BIRTH WEIGHT AND NEONATAL OUTCOME

Birth weight	Percent	No.
Under 2.0 kgs.	4.3	3
2.1 to 2.5 kgs.	21.4	15
2.6 to 3.0 kgs.	50.0	35
Above 3.1 kgs.	24.3	17
Neonatal morbidity		
Blade marks	11.4	8
Perinatal mortality	1.4	1

Table VI shows that Apgar scores at birth and five minutes were 7 or more in 87% and 96% of cases respectively.

TABLE - VI
APGAR SCORES AT BIRTH AND FIVE MINUTES

Apgar score	At birth		At 5 mins.	
	Percent	No.	Percent	No.
0 - 3	2.9	2	1.4	1
4 - 6	10.0	7	2.9	2
7 - 10	87.1	61	95.7	67

Discussion

The obstetric forceps has in its pedigree the instruments of mutilation described in Sanskrit and Tibetan literature as early as 1500 BC (Douglas and Stromme 1975).

Today the premium on an optimum neonatal outcome has resulted in the elimination of very difficult forceps deliveries. This has had an unfortunate backlash even against indicated forceps deliveries, a trend carried over in obstetric literature. Only four papers on the obstetric forceps are indexed in the last ten volumes of this journal, indicating a decline of interest in forceps techniques. The Hay's forceps is designed by a contemporary obstetrician for modern obstetrics.

Our study is a part of the 315 cases reported in the Western India Trial and reflects similar findings. This is significant since most of our cases were performed by resident medical staff. The credit for the instrument's performance goes to its design and construction. Never before has the principle of parallelism that precludes head compression been applied so successfully, the previous instruments, designed by Mann and Shute having been somewhat clumsy in practice (Myerscough 1982).

The spring bending potential unique to this forceps flexes the presenting part in contrast to most other instruments that encourage deflexion.

At 400 gms. it is the lightest and at 36 to 42 cms. it is at once shorter and longer than most conventional long obstetric forceps. We started with outlet applications but with familiarity we used the instrument for various indications under

different conditions. While the various indications reflect versatility the forceps has a particular advantage in midcavity applications, forceps rotations and for delivering the aftercoming head.

The slender blades require minimal anaesthesia for insertion and extraction, most cases requiring a mere perineal infiltration. The technical assessment was more than satisfactory in a majority of cases irrespective of indication, type of application and birth weight.

Maternal morbidity was limited to easily repaired local injury in 11.4% cases in spite of a number of difficult applications. The most significant finding was instrument safety relative to neonatal outcome. There were no fetal injuries other than blade marks that resolved spontaneously. The parallel branches offer a wide margin of safety making the application of undue head compression very difficult.

Conclusion

The Hay's forceps is a versatile and deserving replacement for an age old design that could make the obstetric forceps relevant and safe for contemporary obstetric practice.

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