

# OUR EXPERIENCE WITH THE VERSATILE HAY'S FORCEPS - II (A STUDY OF 40 MIDFORCEPS APPLICATIONS)

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## SUMMARY

A prospective study of 40 midforceps deliveries, comparing 25 Hay's forceps with 15 Simpson's long forceps applications. Though the Hay's forceps was used for applications that were more difficult technically, the evaluation of both instruments was comparable. Maternal morbidity (16%) was significantly less with the Hay's forceps, blade marks (24%) were the only neonatal morbidity and Apgar scores recorded were higher.

The study confirmed the relevance of the midforceps procedure while concluding that the Hay's forceps is safer in comparison to the traditional Simpson's long forceps.

## Introduction

The controversy surrounding the obstetric forceps has seen wide swings between intervention and caution. Concern for maternal and fetal wellbeing was responsible for the widely held opinion favouring caesarean section over midforceps delivery. Many recent publications question this.

Cardozo et al (1983) observed that in selected cases the Kielland's forceps is preferable to caesarean section which confers no special benefit to the fetus and is detrimental to the mother. In a large review of midforceps delivery Richardson

et al (1983) concluded that it is presently not justified to condemn midforceps deliveries well conducted and judiciously indicated.

Midforceps deliveries are conducted with traditional instruments. Donald (1985) describes Kielland's instrument reported in 1916 as the only recent advance in forceps design.

The purpose of this study is to evaluate midforceps deliveries in our practice and compare the recently developed Hay's flexion rotation forceps with the traditional Simpson's long obstetric forceps.

## Material and Methods

Forty midforceps deliveries performed by us over a two year period were

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prospectively evaluated.

A study group of 25 Hay's forceps applications was compared with a control group of 15 Simpson's long forceps applications for performance and safety. The midforceps deliveries with the Hay's forceps are reported in the Western India trial of the forceps conducted by Dr. Nargolkar for the Medico-Surgical Equipment Committee of FOGSI.

#### Method of use

The Hay's forceps is described and its general use is outlined in a preceding paper.

A preforceps evaluation was performed to confirm and record findings. For rotation the anterior blade was inserted directly or by a short wandering over the face by an obstetrician seated on a low stool, the posterior blade being inserted directly. Rotation was performed at the same level in the pelvis while the sliding lock corrected asynclitism. Once the vertex was occipito anterior the forceps was lengthened and downward pressure applied to the shanks to activate the instrument's unique spring bending potential. This flexed the fetal head thereby shortening the presenting diameter (Figure 1).

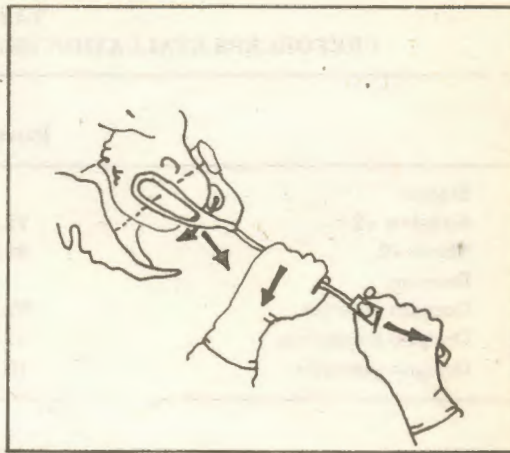


Fig. 1

*Flexion potential of the Hay's forceps flexes the head shortening the presenting diameter*

#### Results and Analysis

##### Indications for midforceps application

Table I shows the indications in both groups to be largely comparable. Forceps rotation was the exception accounting for 40% of Hay's forceps applications, but only 6.7% of the controls.

##### Preforceps evaluation

Table II records the findings of the preforceps examination. The Hay's forceps was used at stations above +2 in 28% cases in contrast to 13.3% of controls. The

TABLE - I  
INDICATIONS FOR MIDFORCEPS APPLICATION

Indications	Hay's forceps		Simpson's forceps	
	Percent	No.	Percent	No.
Prolonged second stage	56.0	14	66.7	10
Forceps rotation	40.0	10	6.7	1
Fetal distress	28.0	7	26.7	4
Trial forceps	12.0	3	13.3	2
Face to pubis	8.0	2	6.7	1
Prematurity	4.0	1	—	—



TABLE - II  
 PREFORCEPS EVALUATION BEFORE MIDFORCEPS APPLICATION

	Hay's forceps		Simpson's forceps	
	Percent	No.	Percent	No.
Station				
At/below +2	72.0	18	86.7	13
Above +2	28.0	7	13.3	2
Position				
Occipito anterior	52.0	13	86.7	13
Occipito transverse	32.0	8	6.7	1
Occipito posterior	16.0	4	6.7	1

TABLE - III  
 TECHNICAL EVALUATION OF MIDFORCEPS DELIVERY

	Hay's forceps		Simpson's forceps	
	Percent	No.	Percent	No.
Pudendal block	16.0	4	73.3	11
Satisfactory application	88.0	22	80.0	12
Satisfactory extraction	92.0	23	80.0	12
Failed forceps	8.0	2	6.7	1

Simpson's long forceps was almost exclusively used in the occipito anterior position (86.7%). Of the Hay's forceps deliveries 32% underwent a basic rotation while two cases had major rotations of more than 90°. Two cases in the Hay's forceps group and one of the controls were delivered as face to pubis.

#### **Technical evaluation of midforceps delivery.**

A pudendal block was used in only 16% of Hay's forceps deliveries opposed to 73.3% of controls.

As shown in Table III the case of application and extraction was comparable in both groups. This is in spite of more difficult applications with the Hay's forceps.

A failure of rotation and two failures of extractions resulted in failed procedures, the incidence in both groups being comparable. All these cases underwent caesarean section.

#### **Maternal morbidity with midforceps delivery**

As seen in Table IV maternal trauma was more common with the Simpson's long forceps. At 16% the overall morbidity with the Hay's forceps was significantly lower than the 40% morbidity with the Simpson's forceps, the incidence of each injury twice as common in the control group.

#### **Neonatal outcome and Apgar scores with midforceps delivery**

As seen in Table V there were no

neonatal injuries with the Hay's forceps a significant finding compared to the 20% injuries with Simpson's forceps. Transient blade marks were more frequent in rotations performed with the Hay's forceps.

The single perinatal mortality in each group was not directly related to the procedure. The causes were meconium aspiration with postdatism in the Hay's forceps group and intrapartum asphyxia with the Simpson's long forceps.

Table VI shows the Apgar scores at birth and 5 minutes to be more 7 or more in 87% and 95.7% of Hay's forceps deliveries significantly better than the 61.5% and 84.6% in Simpson's long forceps deliveries.

### Discussion

The controversy surrounding forceps delivery will always be with us. In debating the place of midforceps delivery today we must consider the changes in the practice of contemporary obstetrics. The formidable instruments of the past were designed when the obstetrician's need was to effect delivery from high levels in the pelvis at any cost without the option of caesarean section. Cardozo et al (1983) listed guidelines for midforceps application with the Kielland's forceps stressing safety and reflecting fundamental changes in obstetric attitudes. To justify continued midforceps use there should be a parity or advantage over caesarean section.

TABLE - IV  
MATERNAL MORBIDITY WITH MIDFORCEPS DELIVERY

	Hay's forceps		Simpson's forceps	
	Percent	No.	Percent	No.
Vaginal tear	12.0	3	26.7	4
Episiotomy extensin	8.0	2	20.0	3
Perineal tear	4.0	1	13.3	2
Cervical tear	4.0	1	13.3	2

TABLE - V  
BIRTH WEIGHT AND NEONATAL OUTCOME

	Hay's forceps		Simpson's forceps	
	Percent	No.	Percent	No.
<b>BIRTH WEIGHT</b>				
Under 2.0 kgs.	4.0	1	—	—
2.1 to 2.5 kgs.	32.0	8	20.0	3
2.6 to 3.0 kgs.	32.0	8	60.0	9
Above 3.1 kgs.	32.0	8	20.0	3
<b>NEONATAL MORBIDITY</b>				
Blade marks	24.0	6	13.3	2
Cephalhaematoma	—	—	13.3	2
Facial palsy	—	—	6.7	1
<b>PERINATAL MORTALITY</b>	4.0	1	6.7	1



TABLE VI  
APGAR SCORES AT BIRTH AND 5 MINUTES

	Hay's forceps		Simpson's forceps	
	Percent	No.	Percent	No.
At birth				
0 - 3	4.3	1	15.4	2
4 - 6	8.7	2	23.1	3
7 - 10	87.0	20	61.5	8
At 5 minutes				
0 - 3	—	—	7.7	1
4 - 6	4.3	1	7.7	1
7 - 10	95.7	22	84.6	11

Our evaluation of 40 midforceps applications compares Simpson's traditional instrument with Hay's relatively recent innovation. The indications for midforceps were generally cases where vaginal delivery is feasible but the time factor was important. When the prerequisites for forceps delivery are present, vaginal delivery is quicker than caesarean section. The Hay's forceps achieved delivery from higher stations and more forceps rotations than the controls.

Easier application of the delicate Hay's forceps blades had fewer cases needing a pudendal block. Technical evaluation of midforceps delivery was assessed as satisfactory in over 80% cases, both the instruments had comparable results though the Hay's forceps applications were technically more difficult.

Maternal morbidity with the obstetric forceps in midforceps applications is reported to range from 6 to 40%, the latter figure relates to studies that concluded minor trauma (Richardson 1983). In our study morbidity with the Hay's forceps (16%) was significantly lower than the Simpson's forceps (40%). Most of the complications of midforceps delivery were

relatively minor, and included easily repaired episiotomy extensions or vaginal or cervical lacerations.

Richardson et al (1983) concluded that if the alternative to the midforceps delivery were caesarean section and the only deciding factor were maternal morbidity, then the use of midforceps would clearly favour the mother since caesarean sections have a built-in morbidity risk.

The light construction and parallel branches of the Hay's forceps rendered midforceps delivery very safe for the neonate. Immediate neonatal morbidity was high (20%) and apgar scores were lower with the Simpson's long forceps.

Richardson et al (1983) in a review of most studies published in the last 30 years concluded that the corrected neonatal mortality rate is close to 0%. In our study none of the perinatal losses were forceps related.

### Conclusion

Indicated midforceps delivery that is well conducted has a definite role to play in contemporary obstetrics and is a valid alternative to caesarean section in a variety of indications.

While the traditional Simpson's long forceps and the recent Hay's forceps had comparable indications and technical evaluation, the Hay's forceps was significantly safer relative to both maternal and fetal outcome.

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**References**

1. *Cardozo, L.D., Gibb, D.F. and Studd, J.W.W.: Brit. Med. J. 287:315, 1983.*
2. *Donald, I.: Practical Obstetric Problems, 5th Edition, Singapore 1985, PG Publishing Pvt. Ltd. p.624.*
3. *Richardson, D.A., Evans, M.I. and Cibils, L.A.: Am. J. Obstet. Gynec. 145:621, 1983.*