

# I-gel® in Paediatric Surgery: First Global Study at Strasbourg's University Hospital

With Pierre Diemunsch, University Professor

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*The Hautepierre University Hospital, Strasbourg  
(18,500 anaesthetic procedures per year, of which 3,000 take place in the paediatric surgery anaesthesia unit).*



*Dr Claire Bopp conducted the first international clinical trial of the i-gel paediatric device at the Hautepierre University Hospital, Strasbourg.*

**Capital Medical Equipment:** Can we really state that i-gel® has been a significant step forward for paediatric anaesthesia?

**Pierre Diemunsch:** In my opinion, i-gel® is currently the most successful device to be used in place of the traditional laryngeal mask which had already, for its part, completely revolutionised anaesthetic practice in terms of artificial ventilation and the management of difficult intubation cases. Despite the fundamental progress made thanks to the advent of the traditional laryngeal mask, it is still possible to optimise the advantages provided by this device, particularly by improving its stability in the patient's mouth. In this context, i-gel®, released onto the market by Intersurgical three years ago, represents a remarkable advance in clinical practice, thanks to its anatomically-shaped tube.

Similarly, inserting a traditional laryngeal mask involves the concomitant use of an intermaxillary block to prevent the patient from biting the tube. The i-gel® shaped tube has this bite-blocker integrated, eliminating the need for an additional independent device.

**CME:** How have you used the i-gel® paediatric device in your department?

**PD:** The first instances when we used i-gel® were in day surgery cases in which there were general indications for the use of a laryngeal mask. However, the anaesthetists in the paediatric anaesthesia unit very quickly realised that i-gel® use could be extended to cases in which use of supralaryngeal devices was indicated, and particularly help avoid resorting to tracheal intubation in many circumstances. This advantage made the team very keen to use the i-gel® paediatric device.

An initial global study involving the first 50 children undergoing ventilation using the i-gel® paediatric device was carried out over two months. General anaesthesia (sevoflurane) by inhalation was performed without muscular relaxation, under controlled normo-ventilation.

Thus the first 50 uses of the i-gel® paediatric device became the subject of an observational study which included an evaluation of the insertion of the i-gel® device, the quality of the ventilation, the suitability of the size recommended in

relation to the patient's weight, the stability of the device, particularly when the patient is moved, any potential complications and the anaesthetists' satisfaction. In this study, the known advantages of the adult version of i-gel® in terms of the stability of the device, good tolerance and the absence of leaks were observed again. But the aspect which the physicians considered most important was that, amongst the 50 children who benefited from i-gel®, orotracheal intubation was indicated for 33 of them, according to the department's protocols at the time of the study. Being able to avoid intubating a child represents a major advantage. Anaesthesia is made less traumatic, and the risk of an adverse reflex reaction or laryngospasm during intubation or extubation is greatly reduced.

In addition, we can highlight the fact that the device is very comfortable for children and very easy to use for clinicians. Aside from these clinical advantages, avoiding intubation also means that savings can be made in terms of doctors' and anaesthetic nurses' time and in terms of equipment used.

**CME:** Does the i-gel® paediatric device seem as easy to use as the device for adult patients?

**PD:** Yes, definitely. In the study of the first 50 uses we are discussing, the paediatric surgery anaesthetists learnt how to use i-gel® very quickly, since the success rate for inserting the device was 80% at the first attempt and 100% after two attempts. These results are presented in detail in papers submitted to the SFAR<sup>1</sup> and ASA<sup>2</sup> this year.

**An evaluation of the insertion of the i-gel® device, the quality of the ventilation, the suitability of the size recommended in relation to the patient's weight, the stability of the device, particularly when the patient is moved, any potential complications and the anaesthetists' satisfaction.**

### An initial global study, involving the first 50 children undergoing ventilation using the i-gel® paediatric device, was carried out over two months.

Since this initial study, the number of instances in which the i-gel® paediatric device is used has more than tripled within the department and the success rate at the first attempt has improved even further.

#### **CME: What would you say about the quality of the ventilation?**

**PD:** The controlled ventilation (maximum pressure: 14.8 +/- 3.6 cm H<sub>2</sub>O, leak pressure: 25.1 +/- 4.7 cm H<sub>2</sub>O) has always been considered of good or very good quality by the anaesthetists. No desaturation episodes were observed, something which is particularly significant in paediatric anaesthesia. In addition, we can emphasise that throughout this whole study, there has been no morbidity, no traces of blood have been observed on the i-gel® device when it is removed, there have been no spasms on waking, and there were only two brief episodes of coughing when the i-gel® device was removed.

#### **CME: Does the i-gel® paediatric device not seem to be a particularly good solution to a problem which arises in paediatric anaesthesia?**

**PD:** Yes it does. A specific technical aspect of paediatric anaesthesia is the frequent addition of caudal anaesthesia to the general anaesthesia. This caudal anaesthesia

is performed once the child is asleep and requires the child to be in the lateral decubitus position. In the experience of the paediatric anaesthesia team in Strasbourg, this change in position is likely to lead to the traditional laryngeal mask becoming displaced, even when special attention is paid to attaching the mask to the patient. This risk that the device controlling ventilation may be displaced means that our team have a certain reticence about using the laryngeal mask and consequently orotracheal intubation is currently very widely indicated when caudal anaesthesia is planned to accompany general anaesthesia. In our study, the i-gel® device, due to its stability, allowed the child to be placed in the lateral decubitus position to perform the caudal anaesthesia, without this causing leaks or displacement of the supralaryngeal device.

Our team of paediatric anaesthetists have therefore recognised two major advantages of i-gel®: the device makes it possible to move the child in complete safety, and means that intubation is not required as often.

#### **CME: How was the new i-gel® in its paediatric version received in your department?**

**PD:** Overall, the device got an excellent reception, for the reasons given above. I must also say that the anaesthetists are becoming rather impatient as they wait for the i-gel® paediatric device to come onto the market, which is expected to happen at the end of 2009. It is likely that by that time certain improvements will have been made, for example by adjusting the lip marker position or perfecting the i-gel® sizes recommended in relation to the child's weight.

Although the advantages of the i-gel®

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paediatric device demonstrated by this initial global study must still be confirmed on a larger scale, it seems from this point that we can say that Intersurgical's i-gel® paediatric device will make a significant contribution to anaesthesia, replicating the success of the i-gel® device for adults.

Comments gathered by  
Capital Medical Equipment  
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#### References

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- <sup>2)</sup> The I-gel in paediatric surgery: initial series. C. Bopp, G. Carrenard, C. Chauvin, C. Schwaab, P. Diemunsch. American Society of Anesthesiologists (ASA) Annual Meeting: New Orleans, USA, October 17-21 2009 A 147.

## IN BRIEF