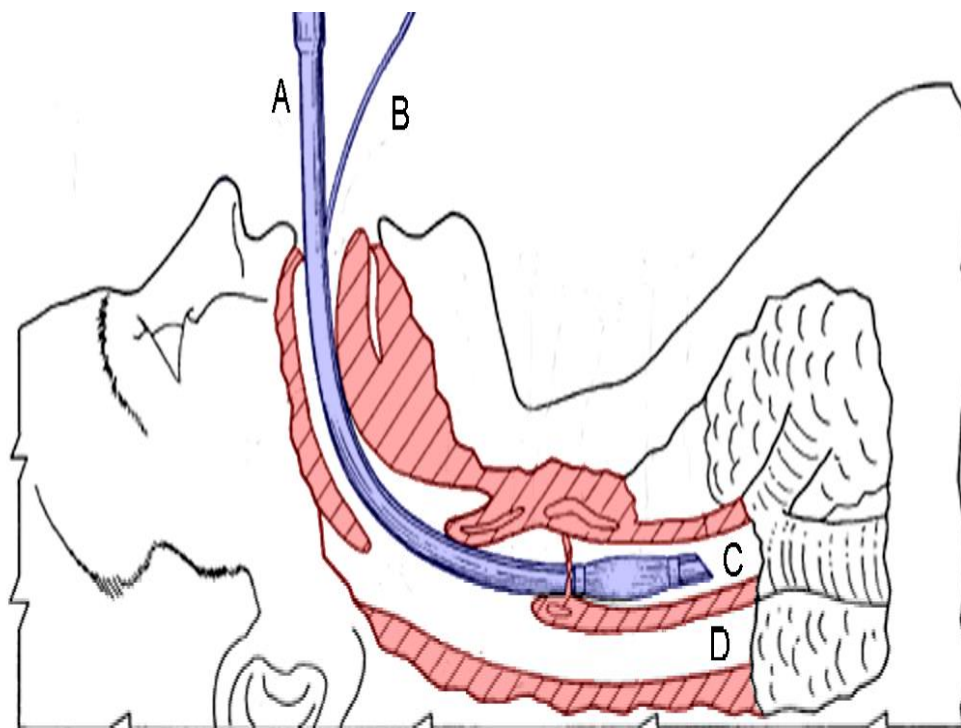


A novel endotracheal tube to reduce incidence of post-intubation stenosis and ventilator associated pneumonia in children and adults requiring artificial ventilation.

NIHR i4i Programme II-LA-0813-20008. Sponsor: NUH

Collaboration between:
Nottingham University Hospitals NHS Trust
University of Nottingham & P3 Medical Ltd

Team includes:
Andy Norris (NUH)
Steve Morgan (UoN)
Sergiy Korposh (UoN)
Simon Talbot (P3)
Ricardo Correia (UoN PDRA)
Rishie Sinha (UoN, NIHR ACF)
Jon Hardman (UoN)



<https://commons.wikimedia.org/> [PhilippN]



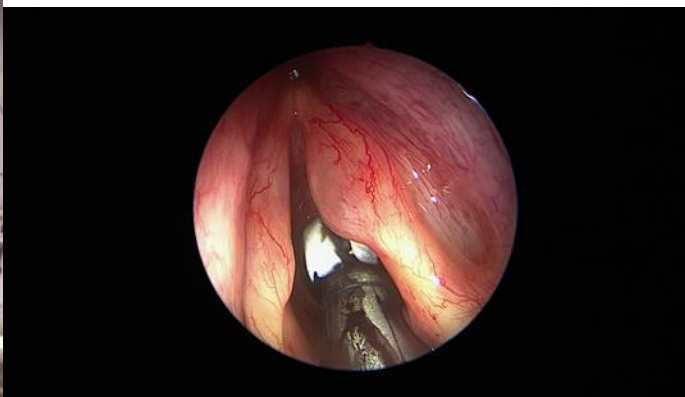
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NHS Trust

UK Patent File GB1420919.1



Post Intubation Tracheal Stenosis (PITS)

“When the stenosis is present it affects and restricts any physical activity. I can't exercise regularly and have gained weight. I can't play with my kids, ride a bike or even go for walks when it's bad. It impacts my voice and the amount of time I talk (which is a big part of my job). “

Respondent 87



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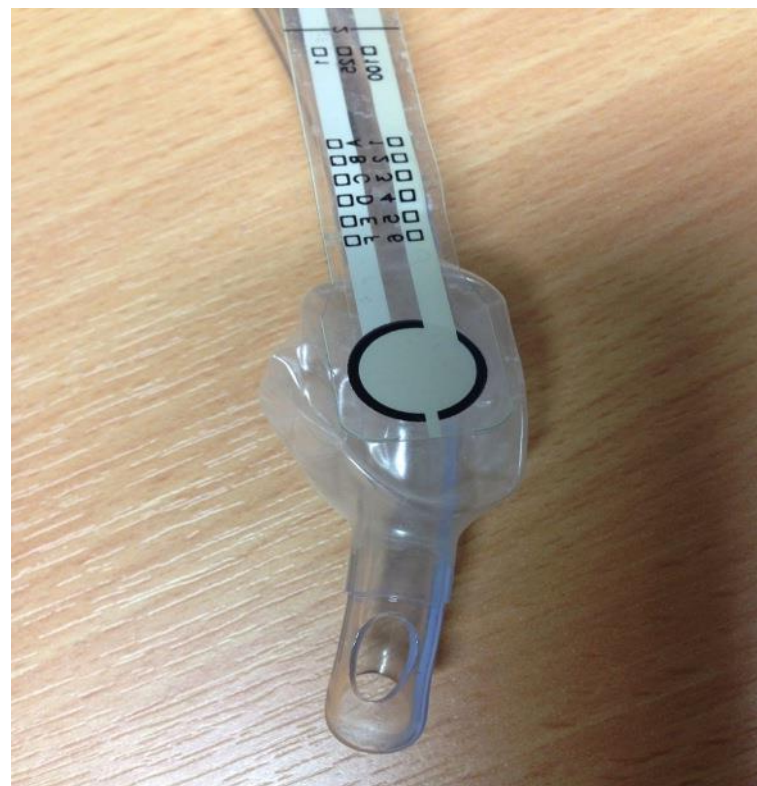
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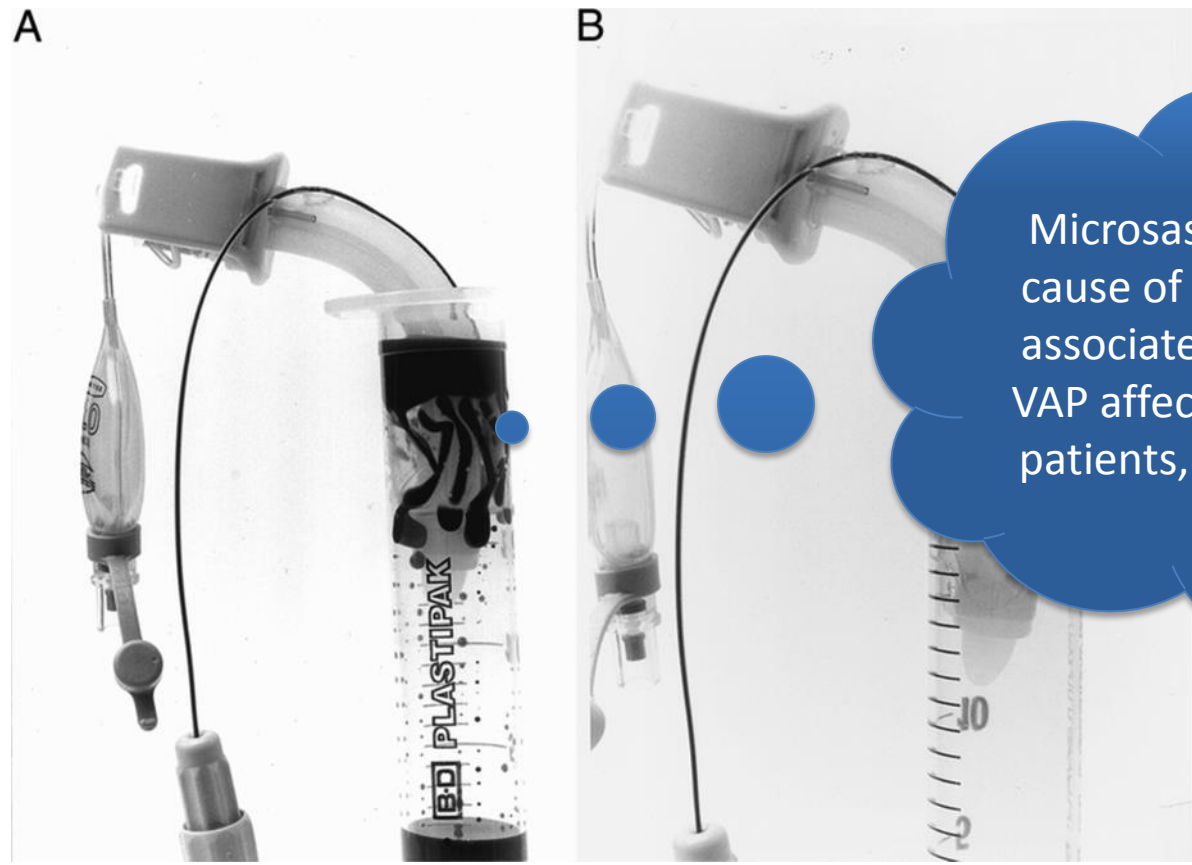
UK Patent File GB1420919.1

Attempts to keep
pressure low: the HVLP
(high pressure low
volume cuff)





From: Gel Lubrication of the Tracheal Tube Cuff Reduces Pulmonary Aspiration
Anesthesiology. 2001;95(2):377-381.



Microaspiration: a key cause of VAP (ventilator associated pneumonia). VAP affects thousands of patients, costs \$Bns p.a.

UK Patent File GB1420919.1

CHALLENGE

If we knew about impaired blood flow and quality of cuff seal in the trachea, could we reduce these problems?

Set out to incorporate optical sensors, initially of blood flow and contact pressure, into an ordinary ETT and make it “smart”.



Simon Talbot:

- Founder & Managing Director, P3 Medical Ltd
- Director, Association of British Healthcare Industries (ABHI)
- Director, Medilink SW

P3 Medical is a privately owned medical device company focussed mainly on single-use devices used in surgery

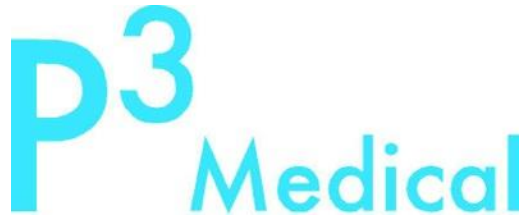


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P3 Offers:

- Design
- Manufacturing (particularly clean-room moulding, extrusion, fabrication and assembly)
- Regulatory
- Route to market – sales and distribution

Experience of a number of collaborative projects similar to current co-operation with Nottingham

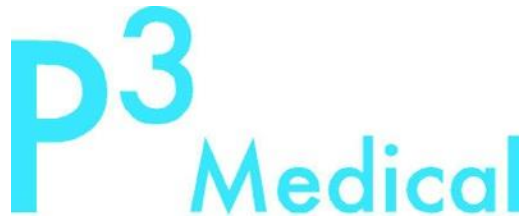


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P3 Needs:

- Innovative ideas or technologies ideally involving surgical devices or anaesthetics/airway
- Partnerships to help develop next generation medical devices & bring to market



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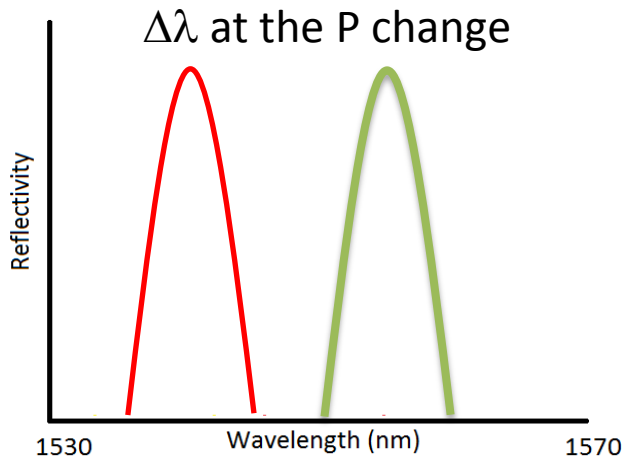
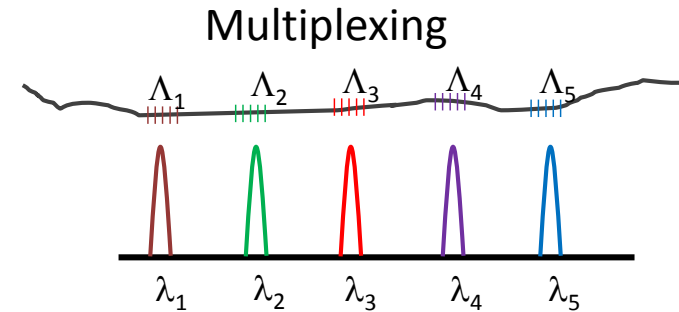
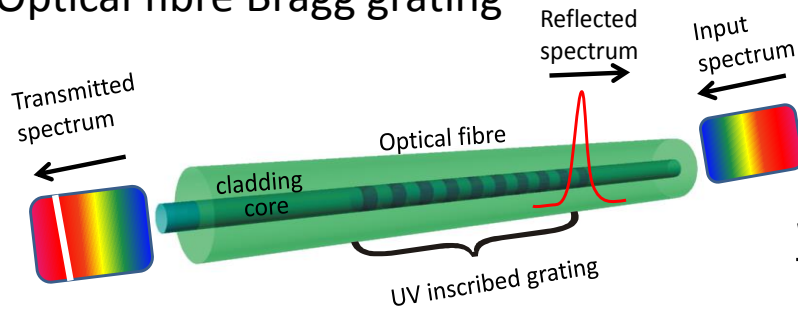
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Optical fibre sensors - background

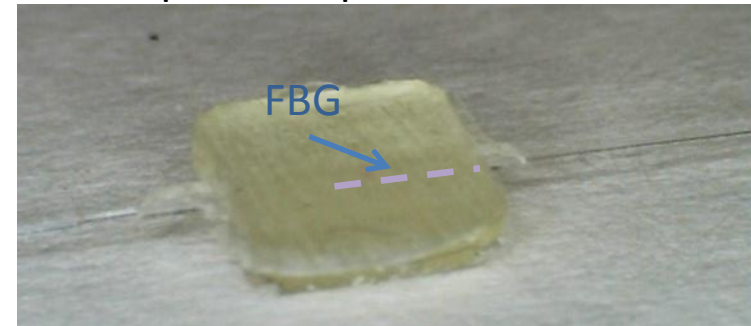
Optical fibre Bragg grating



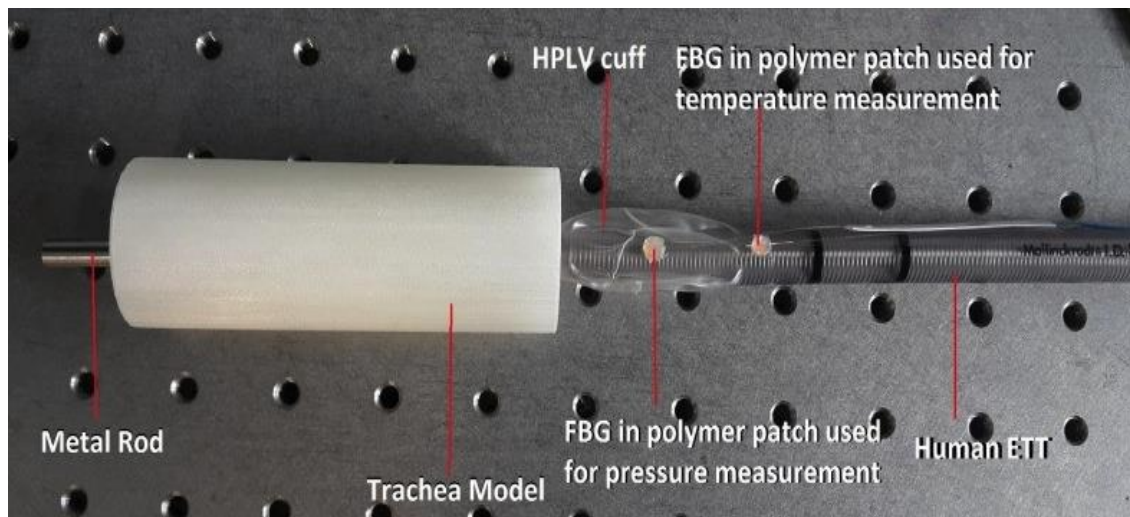
Why:

- High sensitivity;
- Small (125 um);
- Biocompatible;
- Light weight;
- Low cost;

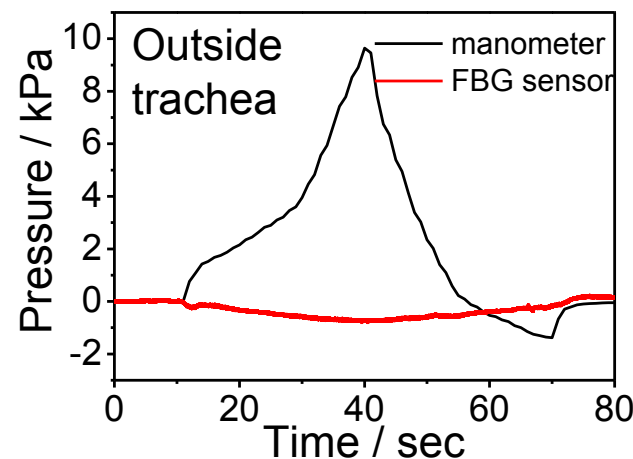
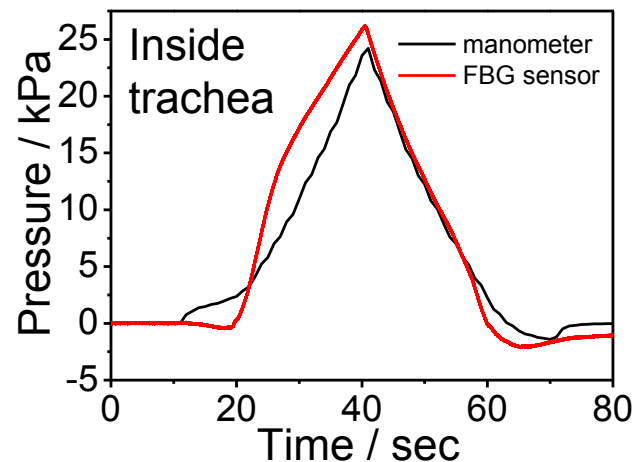
FBG pressure patch



Smart ETT



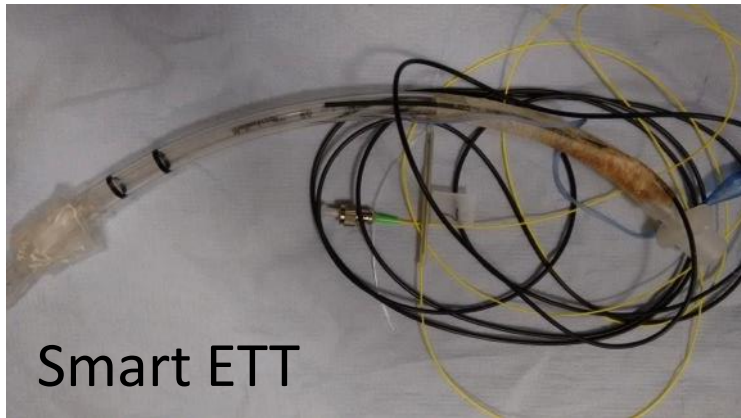
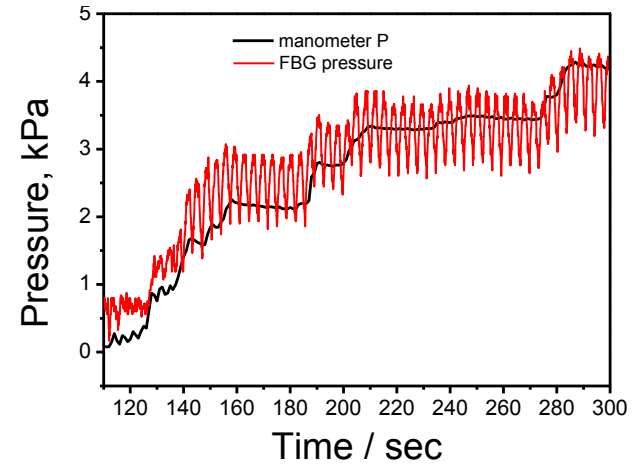
Bench test



Animal trials



Pressure



Smart ETT

PPG

