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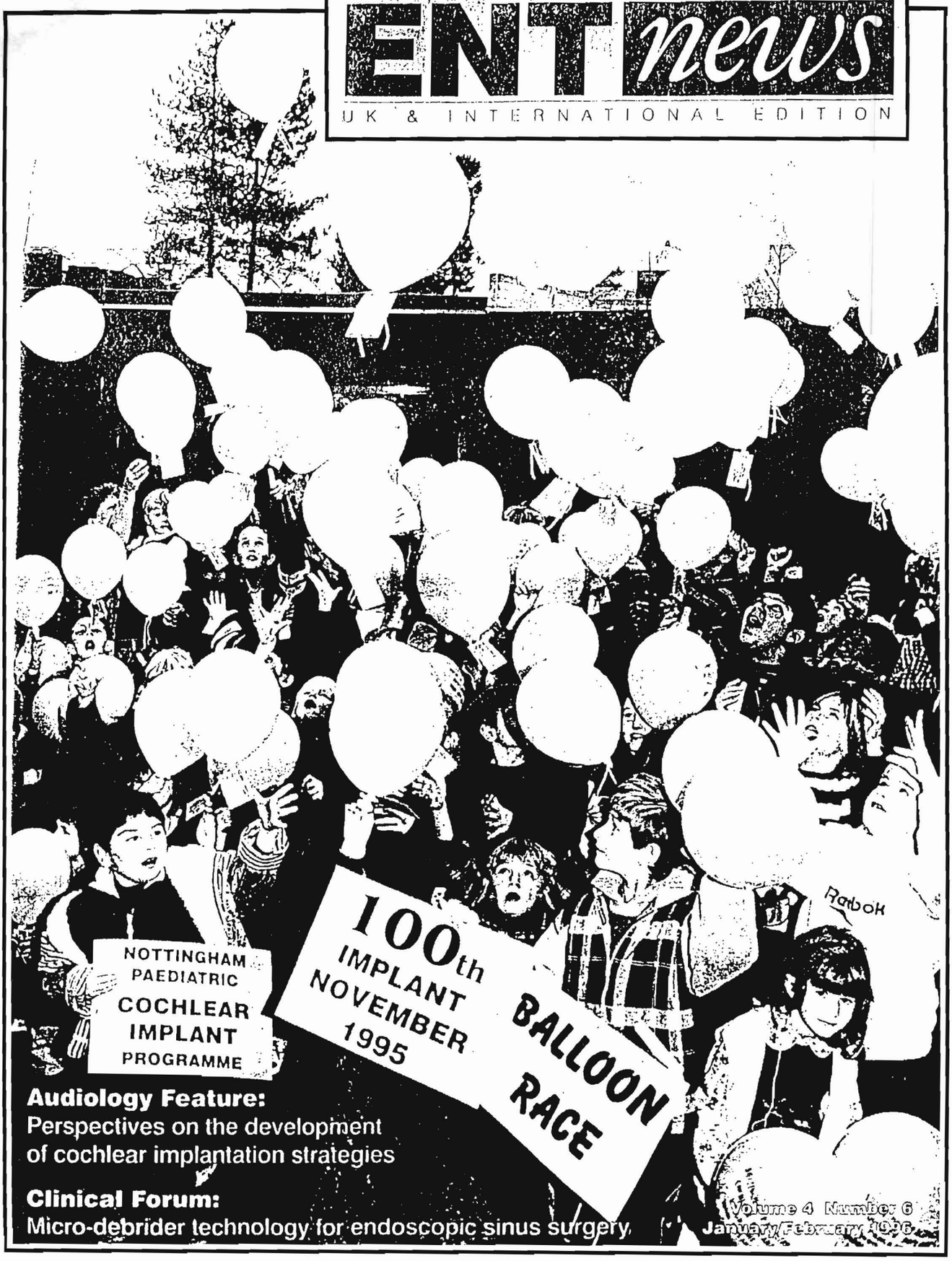


**Audiology Feature:**
Perspectives on the development of cochlear implantation strategies

**Clinical Forum:**
Micro-debrider technology for endoscopic sinus surgery

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Microdebrider technology was first used in paranasal surgery by Reuben C Setliff in 1992 in the US. In the UK, Robin Youngs has been developing a rationale for its use. Here they discuss their experiences and evaluate the role of the micro-debrider in Endoscopic Sinus Surgery.

# The development and use of Micro-debrider technology in the USA

Reuben Setliff III

The dawn of powered instrumentation for operative paranasal sinus disease occurred in North Platte, Nebraska in August 1992. The device was off-the-shelf and made by Stryker Endoscopy of San Jose, California for temporomandibular joint surgery. It was utilised for endoscopic sinus surgery, using functional techniques, without modifications. Even though there were some early difficulties with tip selection, suction settings, prevention and clearing of clogged lines, and technique of application with the device, it was quite evident early on, that at its worst, it was an improvement over the then available 'grab and tear' instrumentation.

The combination of a 3.5mm instrument with benign contours which provides continuous suction and removal of resected bone and tissue without withdrawing the instrument sets the instrumentation apart from conventional or laser methodology. The ability to readily convert a difficult polyp case to a routine procedure and deliver a precision technique while retaining mucous membrane at the limits of the dissection are other combination advantages to powered instrumentation. Morbidity and the subsequent healing burden for the patient are dramatically reduced, with most patients being done under monitored sedation on a same day surgery basis and without the requirement of nasal packing.

The possibilities of powered instrumentation have been largely realised in the development of precision minimally invasive techniques directed, not toward the sinuses or their ostia, but rather toward the transition spaces for the anterior sinuses. The result is a move away from middle meatal antrostomy, none being performed since February of 1993, and toward accepting the maxillary sinus ostium and/or its accessory ostium as definitive maxillary sinus surgery. The overall revision rate for operative sinus disease has dropped from 15 % to 6.5%. Rarely is secondary surgery required for the maxillary sinus.

The benefits for the patient have been mentioned. The benefits for the surgeon include the delivery of a precision technique, a certain remedy for apprehension in surgery. Real time suction enhances the delivery of an anatomical dissection, an experience not always available with other instrumentation. Finally, the surgeon's burden for post operative management is dramatically reduced, most patients showing satisfactory healing without significant scarring in much shorter time intervals following the procedure and without meticulous post operative cleaning.

Most American surgeons who fully realise the potential benefits to both themselves and the patient find that it is very difficult to revert to non-powered instruments again. In the author's hands and in at least one academic institution, the University of Missouri Medical Center, cases are routinely cancelled if the instrumentation is not available.

There are some caveats which are helpful and essential in the setup and application of the micro-debrider to endoscopic sinus surgery. The power unit offers both rotary and oscillation modes. Sinus surgery is far more effective in the oscillation mode. Although many tips or blades are available, the 3.5mm aggressive cutter has proved to be the most useful in my hands and is used almost exclusively for all applications, both paediatric and adult.

The device is *suction critical*. Extensive experimentation has demonstrated that a vacuum of 160 to 180mm of mercury must be obtained at the point of the attachment of the suction tubing to the hand piece. Care must also be taken that the moveable 'wing' on the top of the hand piece maintains a flush position with the hand piece itself. Otherwise, suction may be partially or completely cut off. Any loss of effectiveness during surgery will most likely be due to some interruption in suction.

The device is also most effective when there is full depression of the foot pedal. Then, and then only, is full power being applied to the hand piece. Under general anaesthesia, continuous irrigation may be provided by an assistant, resulting in continuous clearing of the suction lines during surgery. An alternative, and preferred by the author, since most procedures are performed under monitored sedation, is to 'give the tip a drink' to clear the suction line each time it is withdrawn from the nose. When so doing, the foot pedal should be depressed, to the extent that the device may occasionally stop in a position which completely closes the 'window' at the tip. It should also be noted that irrigating the device is not possible if the 'window' is closed. It is hoped that second generation devices will address many of these problems.

In summary, powered instrumentation properly set up and applied addresses most, if not all, of the troublesome issues for today's sinus surgeon. The device itself is probably not as important as the potential for ever more minimally invasive and precise sinus surgery based upon a rationale that neither the sinuses nor its ostia are the culprits in the pathogenesis of sinusitis, but rather the transition spaces for the anterior sinuses. The precision afforded by the device decreases apprehension for the surgeon allowing a more anatomical and systematic approach to the paranasal sinuses. It also reduces morbidity and appears to offer less risk and healing burden for the patient. Supporting instruments are also dramatically reduced.

**Reuben Setliff III MD** is a practising Otolaryngologist in North Platte, Nebraska he completed his residency in otolaryngology at Vanderbilt University in 1969 and is certified by the American Board of Otolaryngology/Head & Neck Surgery, Inc. He is a fellow of the American Academy of Otolaryngology and regularly instructs at the annual meetings. During the past year, he has conducted courses and given lectures to physicians in the continental United States, Mexico, Canada, as well as in China and Korea.

## Bibliography

1. Parsons D S, Setliff R C, Chambers D W, *Op Tech.* Otol/Head, Neck Surgery 1994; 5: 40-42.
2. Setliff R C, Chapter. In Stankiewicz JA (ed): *Advanced Endoscopic Sinus Surgery*, Mosby; 1995
3. Setliff R C, Parsons D S, *The Hummer: New Instrumentation For Endoscopic Sinus Surgery*, Am. J. Rhin., 8.275-278.
4. Accepted for publication, *A Remedy in Apprehension in Functional Endoscopic Sinus Surgery.* Otolaryngology Clinic of North America, Feb 1996
5. Accepted for publication, *Minimally Invasive Sinus Surgery, the Rationale and the Technique*, Otolaryngology Clinic of North America, Feb 1996.