YAG laser rates decrease, but not as much as expected

THE introduction of square-edged IOLs has resulted in a decrease in Nd:YAG laser capsulotomy rates in the US, but not to the extent that would be predicted based on statistical models, reported Georgia Cleary MD, at the XXV Congress of the ESCRS.

Dr Cleary, together with her colleague David Spalton MD, Department of Ophthalmology, St Thomas’ Hospital, London, UK, and Douglas Koch MD, Cullen Eye Institute, Baylor College of Medicine, Houston, used US Medicare reimbursement data to determine the effect of the introduction of square-edged IOls on Nd:YAG laser capsulotomy rates in the US and to compare actual rates against those predicted by three models created using data from published studies on capsulotomy rates for the square-edged AcrySof IOl (Alcon).

Analysis of Medicare data for the period ranging from 1993 through 2003 showed rates of Nd:YAG laser capsulotomy decreased in parallel with the introduction of the square-edged AcrySof IOl. However, the actual number of capsulotomies reimbursed by Medicare exceeded what was predicted by all three models.

Using results from the best case model, which was based on the highest expected capsulotomy rate for the AcrySof IOl, the investigators calculated that in 2003 Medicare paid for an additional 130,000 capsulotomies relative to the number predicted. Considering a median cost of about $226 per capsulotomy procedure, the excess capsulotomies cost Medicare an additional $30m. In the model representing the worst-case scenario, which used the lowest expected capsulotomy rate for the AcrySof IOl, the added cost to Medicare for the discrepancy between the actual and predicted cases exceeded $49.5m.

"The problem of PCO, and consequently Nd:YAG laser capsulotomy, has decreased significantly over the past decade as a result of improvements in IOl design, biomaterial, and surgical technique. However, in 2003, Nd:YAG laser capsulotomy still cost the US Medicare system $158m," said Dr Cleary.

Aside from the estimated costs to Medicare, Nd:YAG laser capsulotomy carries additional fees to patients and exposure to the inevitable risks of the procedure. If the cost of managing complications of Nd:YAG laser capsulotomy is considered, the cost to Medicare is likely to be far higher than we estimated, noted Dr Cleary.

The investigators note that this situation has possible implications for European practice.

"Surgical and laser procedures are provided in the US on a fee-for-service basis. This system is also utilised in the public and private sectors of some European countries. It is therefore possible that a financial conflict of interest may play a role in the decision to perform Nd:YAG laser capsulotomy. Thus, European health services, like Medicare, may be exposed to excess costs from this procedure," Dr David Spalton told EuroTimes.

The current study was based on the premise that a square-edged optic is a critical IOl design feature for preventing PCO, and that the AcrySof IOl would provide a good model to study the effect of square-edged IOls on Nd:YAG capsulotomy rates in the US since it was introduced in 1995 and remained the only square-edged IOl available until 2001.

"Multiple studies have reported the AcrySof IOl, with its square-optic-edge design, decreases PCO and Nd:YAG laser capsulotomy rates relative to IOls with other edge profiles. However, those studies have been based on individual practices, and we were interested in studying how it might impact national rates for laser capsulotomy," Dr Cleary explained.

The US Medicare database is an immense resource, permitting the observation of rates and patterns of surgical practice across a vast population. No database of this magnitude exists in Europe. Thus, the introduction of the square-edged AcrySof IOls onto the US market provides a unique opportunity to observe the effect of square-edged IOls on Nd:YAG laser capsulotomy.
rates on a large scale. This is not possible using European data, Dr Spalton noted.

Data obtained from the Medicare claims database showed that from 1993 to 2003, the number of reimbursed cataract surgeries increased by 67.4 per cent whereas there was only an 18.9 per cent increase in the number of capsulotomies performed. Data from Alcon’s records showed the market share for its square-edged IOL rose from zero per cent in 1993 to 15.0 per cent in the year of its introduction to 48.5 per cent in 2003.

The researchers derived a predicted rate of laser capsulotomy for round-edged lenses from the Medicare data based on the average of the rates from 1993 and 1994, which represented the two years prior to the introduction of the AcrySof IOL when only round-edged IOls were available. The average capsulotomy rate for the round-edged IOls in those two years was 48.3 per cent. That value was used to calculate the number of capsulotomies that would be required in eyes with round-edged IOls in subsequent years.

Two sources provided that data for predicting capsulotomy rates for square-edged IOls. The first was a 2002 paper from Dr David Apple’s group that found a 3.3 per cent capsulotomy rate in post-mortem eyes with an AcrySof IOL. The second paper, a retrospective review by Dr James Davison, published in 2004, provided clinical data. Dr Davison analysed data from more than 12,400 eyes implanted with an AcrySof IOl over a seven-year period and reported cumulative capsulotomy rates for two AcrySof models: 13.2 per cent for the MA30BA and 16.0 per cent for the MA60BM. Those rates were applied to the calculated number of square-edged IOls implanted using the Medicare data on cataract surgeries and the AcrySof market share to develop predictions of numbers of capsulotomies performed in eyes with the square-edged IOL.

“Considering the highest number of predicted capsulotomies for square-edged IOls based on Davison’s rate for the MA60BM, the number of capsulotomies actually performed exceeded the predicted number by almost 24 per cent. In the best-case scenario for the capsulotomy rate using the data from the post-mortem study, the actual number of capsulotomies performed exceeded that predicted by almost 46 per cent,” reported Dr Cleary.

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