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History of ophthalmology

Skiagraphs and foreign bodies

The use of x rays in locating ocular foreign bodies is taken for granted now, but in January 1897 at the meeting of the Society of Ophthalmology, Mr Mackenzie Davidson had just described a practical technique for doing so.

'Because these Rontgen rays travel in straight lines,' he explained, 'it is only necessary to take two different views in order to locate an object.' He went on to explain that relating the position on the film to the patient's orbit was the only problem. Previous skiagraphers had come up with mathematical formulas which were so complicated as to be unusable to the surgeons of the day.

Mackenzie's technique was simple but workable. Two metal knitting needles were fixed together in a cross, and brushed generously with black ink. The patient's face was then placed firmly against them. Shooting laterally, the cross on the patient's skin appeared clearly on the film. In the anteroposterior view, the lateral distance between the foreign body and the needles could be measured.

This was good news to a certain Dr Bickerton, who was treating a grouse beater injured in the line of duty, and wished to confirm that the pellet was lodged within the orbit. Having taken x rays, he was reduced to repeatedly x raying a skull with a similar pellet taped in various positions, in order to guess which film of the skull looked most like his patient's. As each exposure took 15–20 minutes, this must have been tedious.

Mr Hartridge then applauded the use of the x rays, presenting the case of a stable boy who was shot in the eye by an air rifle and admitted as an emergency to the Westminster Hospital, where a busy house officer admitted him, snipped off a prolapse of the iris and prescribed cold compresses overnight. Exhaustive search among the straw – ordered by Mr Hartridge – revealed that a pellet *could* be missing, and a skiagraph 4 days later confirmed its resting place. As it appeared to be within the globe, this was enucleated, explored and the skiagraph's efficiency duly confirmed. Mr Hartridge then passed around the pellet.

Having been quiescent until then the President spoke, commenting that it was very easy to tell whether a foreign body was within the globe or not. If intraocular, it would move position as the

globe did when the patient was asked to roll his eyes a little under the x ray tube, and the company agreed that this would be very useful.

Mr Power and Mr Treacher Collins lamented the fact that this x ray method was only recently available, as they had both enucleated several eyes on the suspicion of containing shot and had been proved wrong.

Interestingly, Mr Power questioned the wisdom of removing any eye which contained gunshot by reporting the following case. A cabman was punched in the eye by another cabman, sustaining rupture of the globe. As he had already lost one eye and feared to lose his livelihood, he begged for conservative treatment. Against his better judgment, the surgeon stitched the globe and waited. To his amazement, the eye did well and the patient was able to continue his work (presumably aided by the unimpaired vision of his horse). 'If such an "angry and severe wound" can heal, can we assume that a globe containing shot will not?', Power asked.

The only dissenting voice in the discussion was Mr Holmes Spicer, who described a patient who was blinded after shooting himself through the temples in a suicide attempt. An x ray revealed one bullet within the orbit. The patient was quite upset by the examination, and succumbed to meningitis on his return. But at exhaustive post mortem, *no trace of the bullet was found!* 'The x rays had not told the truth,' comments Holmes Spicer.

Nevertheless, the mood of the meeting was optimistic, and it was agreed that x rays enable the ophthalmologist to decide whether a foreign body is in the eyeball, to locate it, and to estimate its size. And (an addendum that would galvanise a modern radiation protection officer) 'with regard to the patient I showed with partial loss of hair,' commented Mackenzie Davidson, no doubt somewhat defensively, 'this only occurred because the x ray tube was a little weak, and it should not happen again'.

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