small bowel obstruction, generalised peritonitis, diabetic ketoacidosis, and the administration of opiates (which cause spasm of Oddi's sphincter). A different clinical scenario exists when the salivary glands are inflamed, most often with calculi or mumps; the resultant hyperamylasaemia is not usually a diagnostic problem.

Asymptomatic hyperamylasaemia has several causes. Pancreatic pseudocysts may form during or after episodes of acute pancreatic necrosis. The amylase activity within these pseudocysts may be extremely high, and leakage into the blood may be associated with marked hyperamylasaemia. Sometimes amylase molecules combine with plasma proteins (usually immunoglobulins). The resultant complexes are so large that they can be precipitated by certain agents (such as polyethylene glycol) and cannot be cleared by the kidneys—in contrast with amylase, which has a relatively low molecular mass, doesn't precipitate (much), and is readily excreted except in renal failure. Macroamylase is a well recognised phenomenon, at least by laboratory staff, and if suspected can be readily confirmed or excluded.¹ In this patient, very high amylase activity was seen in urine (12 218 U/l), and only 9% of amylase activity precipitated (reference interval <57%), thus excluding macroamylasaemia.

Production of amylase (usually the salivary isoenzyme) has been documented with various kinds of ovarian neoplasm. Serous cystadenocarcinoma, mucinous tumour, surface papillary carcinoma, and endometrial adenocarcinoma of the ovary have all been implicated.²⁻⁵ Other malignancies reported to

secrete amylase include gastric carcinoma, multiple myeloma, lung carcinoma, and pheochromocytoma.⁶⁻⁹ The basis of amylase production by malignant tissue is unclear, although its secretion by tissues known to contain amylase might be activated through pathological processes such as inflammation or tumour formation.¹⁰

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Centenary of first successful human transplant

This year, 7 December will mark the 100th anniversary of the first successful human transplantation. On that day Eduard Zirm (1863-1944), a Viennese born and trained ophthalmologist, performed bilateral corneal transplants in what was then Olmuetz, Austria-Hungary (today's Olomouc in the Czech Republic). The patient was a 43 year old labourer who had been blinded three months earlier when some lye he was slacking squirted into his eyes. By December, his corneas were completely opaque. The donor cornea was from an 11 year old boy who had had a deep foreign-body injury to one eye, leaving him blind in that eye and in intractable pain.

Zirm operated simultaneously on both patients under general anaesthesia, enucleating the one eye, preserving two discs of cornea from that eye, and transplanting them into openings made in the other patient's corneas. One of the two transplanted corneas remained transparent thereafter, marking the first time that this operation succeeded. Zirm published the case report in 1906.¹

As with many procedures, the early days were difficult and improvement gradual. Paton summarised the historical record concerning corneal scar management over the centuries, first recorded in ancient Egypt.² During the 19th century surgeons performed corneal transplantation on animals and humans but without lasting benefit. Poor anaesthesia, bacterial contamination, and inadequate surgical instruments contributed to the failures. After experimenting for some years with various antiseptic agents and graft cutting techniques, Zirm finally

succeeded in 1905. Subsequent improvements in surgical knowledge, suture material, microscopy, and graft preservation have made corneal transplantation routine, by far the most common transplantation in the United States with 46 346 done in 2003 alone.³

After 1905 it would take another half century before another tissue was successfully transplanted. Kidney transplantation began in 1954, followed by liver and heart in 1967, and bone marrow in 1968, to name the most common (15 138 kidney transplants and 5671 liver transplants were done in the United States in 2003³).

Knowledge continues to advance, and products improve. The individual names of pioneers become lost, but their achievements last and ultimately dwarf their progenitors. But this December we can acknowledge an important step along the way; we can remind ourselves of the circuitous paths intellectual or scientific advancements seem to take, and we can remember Eduard Zirm's role in the first successful human transplantation.

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