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The role of the laboratory in the hospital

L.S. Jacyna, 'The Laboratory and the Clinic: The Impact of Pathology on Surgical Diagnosis in the Glasgow Western Infirmary, 1875–1910', *Bulletin of the History of Medicine* 62 (1988), pp. 389–94 [pp. 384–406].

It is often assumed that the laboratory fitted quickly and easily into diagnostics. This case study of the role of the pathologist in a Glasgow hospital shows that, at the end of the nineteenth century, clinicians used the laboratory only in a limited way and for specific tasks.

Coats [the pathologist to the infirmary], performed all the other functions expected of a hospital pathologist. Most of his time was occupied by autopsies: in 1876, the first full year of the Pathology Department's operation, 130 of these were performed. Coats noted that in addition to these cadavers, he received in that year 43 'morbid products' to examine. . . .

The bulk of the specimens sent to the pathologist . . . were the by-products or detritus of surgery. Amputated limbs, evacuated fluids, and excised joints figure prominently. The largest category was composed of the various tumors excised on the wards. Of the 23 specimens for 1876 for which descriptions survive, 22 were of this kind. A surgeon who dispatched a tumor expected the pathologist to examine it and provide an account of its macroscopic and (in some instances) microscopic appearances. . . .

In some cases of a dubious nature the pathologist was clearly expected to identify a growth; for example, a multiple ovarian cystoma

‘was sent to the pathological department, so that its nature could be ascertained.’ The motive, often, was simple curiosity. George Buchanan, Professor of Clinical Surgery at Glasgow, in October 1890 sent Coats ‘a small fungiform tumour from the dorsum⁸ of the tongue.’ ‘It does not seem to present any evidence of malignancy but it is not a simple wart,’ Buchanan wrote. ‘Can you define exactly what it is[?]’ On other occasions, the pathologist was asked to establish whether a tumor was malignant. . . . Thus, Dr. Walter Sandeman of the village of Bridge of Weir in April 1895 sent the pathologist a mass of hemorrhoids passed *per rectum* with the specific request that he ‘let [Sandeman] know if there [was] anything of a malignant nature about the specimen.’ This is a common plea in the letters that accompanied the specimens regularly sent from the Peterborough Infirmary to Glasgow for pathological examination during the 1890s.

More often, however, the clinician was satisfied as to the character of what he had excised. The pathologist in these cases was expected to elaborate upon this diagnosis by specifying the gross and histological⁹ features of the tumor. In such instances the pathologist also served as a check upon the clinical diagnosis, usually confirming it, but sometimes correcting the surgeon’s view.

When the pathological did differ from the clinical diagnosis, the authority of the former was put to the test. Some surgeons were ready to defer to the pathologist. Hector Cameron¹⁰ in two similar cases in 1888 altered the diagnosis recorded in the ward journal in the light of a contradictory pathological report. . . .

In cases where clinicians could not agree on a diagnosis, the pathologist was occasionally requested to act as arbiter. . . . In February 1896, Horace Abel wrote from Peterborough to ask Lewis Sutherland, one of the department’s pathologists, his opinion on the

enclosed specimen removed this afternoon from the Vagina. . . . [The patient] was examined under Ether and a hard growth found on upper part of Vagina which was clinically pronounced malignant disease. . . . The case has been seen by a specialist in Town and pronounced non-malignant. A microscopic examination has been made elsewhere and confirmed Dr. Walker’s original diagnosis. . . .

⁸ *dorsum*: upper surface.

⁹ *gross and histological*: features that can be seen by the naked eye, and at the cell or tissue level, observable only through a microscope.

¹⁰ Hector Cameron was surgeon in charge of one of the female surgical wards at the Western Infirmary.

Sutherland's reply to this appeal was cautious. The portion of tissue sent to him had 'mainly the characters of an inflammatory tissue,' he wrote. 'There is at places a considerable amount of epithelial¹¹ tissue regarded by Dr. Coats as probably cancerous.' This seemed to satisfy Dr. Abel.

[. . .]

Thus, the pathologist was important, yet he remained incidental to the clinical process. His opinion was sought only after the crucial decisions had been made on purely clinical criteria. The surgeons to a great extent still regarded the pathologist as the Keeper of the Dead. The tumors they sent to him were, in effect, little cadavers. The continuity between these excision 'biopsies' and the long-established practice of autopsy is underlined by the fact that until the turn of the twentieth century no special stationery was provided to accompany such specimens: the same request form that accompanied cadavers, slightly modified, was employed. The pathologist's contribution was to identify the specimens' nature with more sophistication than the surgeon could muster; to corroborate or correct the clinical diagnosis; and to add to the stock of medical knowledge. The pathologist's judgment could lead to a revision of the clinical diagnosis or settle a difference between clinicians, but, so far as the patient was concerned, such post facto adjudication mattered little. At most, the pathologist might contribute to the prognosis of a case that had already received surgical treatment.

Cases did occur, however, that deviated more radically from the traditional view of the relation of the pathologist to the clinician. On these occasions, pathology contributed to the formulation of the surgeon's diagnosis and thus to the making of therapeutic decisions. A trickle of specimens sent for diagnostic purposes began to arrive at the pathology laboratory during the mid-1890s. Sometimes they were accompanied by frank confessions of bewilderment on the part of the surgeon. In a case of an extensive tumor of the thigh. Hector Cameron admitted that he 'was unable to decide whether he had to deal with a periostitis: an osteomyelitis or possibly a diffuse sarcoma.'¹² . . . A note of urgency enters into some of these requests, reflecting the new importance being attached to the pathologist's response. His judgment upon a specimen was no longer merely part of a retrospective exercise of no immediate

¹¹ *epithelial*: cells covering the internal and external surfaces of the body.

¹² Periostitis is an infection of the connective tissues surrounding the bones. Osteomyelitis is an inflammation of the bone itself. A sarcoma is a cancer in the supportive tissues of the body, such as bone, muscle and fat.

moment: the course of future treatment depended upon it. As G.H. Edington remarked when asking for an opinion on a growth he had removed, ‘Tubercle, Gumma,¹³ or Sarcoma – as if the last, something more radical may need to be done.’

Cases can be found where the surgeon did heed the voice of the pathologist in the course of treatment adopted. . . . A particularly clear illustration of this is found in a case on Alexander Patterson’s ward in October 1900. In the course of an operation on a swollen knee joint on 24 October, ‘a mass of soft granulations were extracted and in the depth of the wound thus made necrosed¹⁴ bone was found. The probability of sarcoma was discussed and it was decided to get the specimen examined.’ On 31 October the following notation was made: ‘The pathologist’s report of sarcoma to hand. It was considered advisable to amputate at the hip today.’

On the basis of such examples it is easy to conclude that by the end of the nineteenth century ‘laboratory’ medicine had triumphed over the scepticism and opposition of ‘clinical’ purists. This, however, would be a gross oversimplification. The cases cited above where the pathologist was consulted and where his opinion played a crucial part in the clinical process need to be contrasted with others where clinical judgment remained stubbornly autonomous.

One of the most obvious applications of histopathology lay in the field of differential diagnosis. Syphilis and tuberculosis were both endemic at the end of the nineteenth century; these diseases were sometimes difficult to distinguish by clinical criteria alone. Thus, in 1895, Dr. A.B. Kelly confessed himself to be ‘in difficulties’ in the case of a man who presented an evidently syphilitic ulcer of the tongue, but who claimed that he was free of the disease (the social stigma attached to syphilis made clinicians more than usually sceptical about their patients’ testimony in such instances). Kelly sent a scraping from the tongue and a piece of epiglottis¹⁵ to the pathologist to find out whether the lesion was tubercular. The pathologist reported: ‘[The] fragment of tissue from the epiglottis shews an exceedingly typical tubercular structure. A few tubercle bacilli are found among the epithelial cells of the tubercles.’ Pathologists were also called upon to differentiate among various forms of chronic inflammation (whether specific or otherwise) and malignant formations.

¹³ Tubercle is a chronic local inflammation caused by the tuberculosis bacterium. Gumma is a soft tumour, usually caused by syphilitic infection.

¹⁴ *necrosed*: dead.

¹⁵ *epiglottis*: the flap of tissue which protects the voice box.

In other areas, however, clinicians showed what seems an almost willful blindness to the possibility of establishing the nature of a complaint by reference to the pathologist. In the case of M.N., a past history of syphilis was enough to occasion a course of anti-syphilitic treatment for an ulcer of the scrotum. This continued for fifteen months before the ulcer was removed and sent to the pathologist, who pronounced it epitheliomatous. . . .¹⁶

The impression obtained from these examples is that when clinicians were reasonably confident of the nature of the lesion, they saw no reason to consult the pathologist before making a diagnosis. It was only in doubtful cases, when they found themselves 'in difficulties,' that clinicians deemed such extraneous assistance necessary. If the clinical diagnosis in what had seemed a patent case was subsequently called into question, then a belated recourse might be had to pathology.

¹⁶ *epitheliomatous*: tumour in the epithelial tissues.