

enlargement of the thyroid is attributed to a fright, and the tumour enlarges at the menstrual period. In all, throbbing of the carotids is noted. On these cases he makes the following comments: "Enlargements of the thyroid gland are not uncommon in females about the period when the body is fully formed and the menses are in a sort of wavering state. After both these points are completely established, they generally disappear if the health is otherwise good.....It is indeed true that these swellings occur most often and in the greatest degree in young females who have led sedentary lives, and who are of what are called relaxed and nervous habits." It has appeared to me that slight enlargement of the thyroid is not uncommon in anæmic and emotional women. If this occur without exophthalmos and palpitation, we look on it merely as a symptom of the general condition; but if all three are present in the same patient, we give a different name to the illness, and seek a different pathological cause. Advance in science usually tends towards simplification in classification. Have we not in this case arrived rather at greater complexity?

A CASE OF
COMPOUND FRACTURE OF THE PATELLA;
PARTIAL NECROSIS OF ONE OF THE
FRAGMENTS; RECOVERY WITH
MOVABLE JOINT.

WITH NOTES OF NINETEEN OTHER CASES OF COMPOUND
FRACTURE OF THE PATELLA.¹

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F. S—, aged thirty-two, married, sustained a compound fracture of the left patella by striking his knee against the kerbstone. The fracture was transverse, and over it was a nearly horizontal contused wound two inches and a half long, which freely communicated with the cavity of the joint, which was filled with blood-clot; separation of fragments, half an inch to an inch. The joint was syringed out with carbolic lotion (1 in 20), and full aseptic precautions used in the dressing and subsequent treatment of the case, there being no drainage other than that permitted by the wound. The case ran an aseptic course. There was no fever whatever. The wound would have healed readily but for a small sinus leading down to an exposed piece of the lower fragment. A sequestrum came away from this six weeks after the injury. Cicatrisation was soon afterwards complete. The patient has attended as an out-patient. He can now (March 16th) walk about and flex his knee very nearly to a right angle. The fragments are separated by about three-quarters of an inch when the limb is in the extended position; by about an inch and a quarter when the knee is flexed. The lower fragment is widened and irregular; at the outer part the skin is slightly adherent.

This case, I think, presents several points of interest: the transverse direction of the fracture; the little separation of the fragments; the aseptic course, although a portion of one of the fragments necrosed; the question of the immediate treatment of the injury, and when and to what extent passive motion should have subsequently been employed. Compound fractures of the patella are very often comminuted or <-shaped, but both in Mr. Poland's cases in the fifty-third volume of the Medical and Chirurgical Transactions, and in some others I have collected, it is far from uncommon to find the direction of the fracture transverse. The fragments in compound cases appears often to be less widely separated than in simple ones; this may be due to the escape of fluid from the wound, or from the fact that muscular action has less to do with the causation.

The question of the immediate treatment in this case resolved itself into one either of suturing the fragments or simply leaving the wound alone, for I suppose that in these days of aseptic surgery few surgeons would be found to recommend either excision or amputation to a healthy man of thirty-two with a clean, although contused, wound over a fractured patella. I decided to adopt an expectant plan of

treatment rather than suture, for the following reasons: the fragments were not at all widely separated; the injury was nearly twenty four hours old when I first saw the patient, and the case was doing well; there was sufficient drainage already provided by the wound; I could not tell to what extent the fragments were already injured, and, consequently, whether they would bear the strain of wiring. From the subsequent necrosis it would appear that it was well they were not subjected to further mechanical injury. Passive motion was necessarily delayed until the separation of the sequestrum and the final union of the wound. When cicatrisation first occurred there was considerable prominence of a pointed fragment, and it seemed as if very slight violence would cause this to perforate the skin. I have on several occasions flexed the limb as far as I dared, but the fragments being as yet united by fibrous tissue, I have been afraid of stretching or rupturing the uniting band.

It may be interesting to compare the results of Mr. Poland's cases, published in 1870, with some recent cases which have occurred since the more general adoption of antiseptic surgery. In Mr. Poland's eighty-five cases the treatment adopted was "strapping where permissible, ice, leeches, irrigation; and in the suppurating stage fomentations and free incisions, opium, tonics, and support." Mr. Poland divides his cases into those with incised wounds, of which six recovered and two died; those with lacerated and contused wounds, of which thirty recovered and nine died; those associated with gunshot wounds, of which eighteen recovered and three died; those associated with lesions of other bones, of which ten recovered and six died: total, eighty-four recoveries and twenty deaths. The joint suppurated in sixty-three cases, and of those that recovered thirty-one had more or less complete ankylosis. The above statistics, as Mr. Poland observes, probably give too favourable a view of the result of such treatment, as successful cases more often find their way into newspapers than the unsuccessful. This remark will apply with equal force to the cases I am about to relate.

Mr. Rouse has had two cases at St. George's Hospital. 1. Henry R—, aged forty-seven, fell on to his right knee from a height of from twelve to fourteen feet, striking it against the pavement. There was a small lacerated wound over the patella, which was obliquely fractured across the centre. There was half an inch separation of the fragments, the lower of which consisted of two pieces, the external wound corresponding to a depression between them. Antiseptic precautions were used, and a ham splint applied. The temperature rose on the third day to 101° in the evening, otherwise it was normal throughout. The patient recovered with a perfectly movable joint. 2. Edward B—, aged thirty-three, fell from a cart on to his left knee, sustaining a compound comminuted fracture of the patella, over which was a circular contused wound, "which evidently communicates with the joint, although no synovia escapes." The wound was syringed out with carbolic lotion and dressed antiseptically with carbolic gauze. The temperature rose to 100° in the evening, otherwise it was normal throughout the case. The patient recovered, with a movable joint, without any bad symptom whatever.

Mr. Pick read before the Clinical Society on Oct. 18th, 1875,² a case of extensive wound of the knee-joint treated by Lister's antiseptic method, in which the patella was divided by a circular saw and the condyle of the femur wounded. The joint was washed out with carbolic lotion (1 in 40). Suppuration followed, and the patient, a young man aged eighteen, recovered with firm bony ankylosis of the joint.

Mr. Finlay³ records a case of bullet-wound of the knee-joint in which the patella was "grooved" by the projectile, which finally lodged in the femur. The wound was washed out with carbolic water, the bullet extracted, and carbolic oil employed as a dressing. A little fever followed, but the patient, a man aged thirty-one, recovered with a perfect joint.

Mr. Wheelhouse:⁴—Margaret M—, aged twenty-four, fell some twelve feet on to her right knee. Clean transverse wound; fragments half an inch apart; no comminution except one small splinter from upper one. Wound enlarged; joint cleared of blood and washed out with 1 in 20 carbolic lotion. Fragments drilled and wired. No drainage of any kind. Full aseptic precautions. Wound ran an aseptic

¹ Read at the Harveian Society, March 18th.

² Brit. Med. Jour., Oct. 16th, 1875.

⁴ Ibid., June 9th, 1883.

³ Ibid., vol. i., 1883.

course. Patient able to flex knee beyond a right angle. Injured patella as sound as the other.

Mr. Jessop:⁵—Robert L—, aged seventeen, fell into a quarry, striking bent right knee on a steel rail. Brought to the hospital eleven hours after this; the wound full of sand and mud. Compound comminuted transverse fracture of patella; fragments separated half an inch; severely contused wound. Wound purified; joint irrigated for nearly an hour. Fragments wired; posterior drainage. Free suppuration followed. Wire removed on thirty-sixth day. Full aseptic precautions throughout. Some adhesions broken down by passive motion. Patient eventually recovered with absolutely perfect movement of joint.

Mr. Ormsby:⁶—James B—, aged twenty-four, was struck by a puncheon on his left knee, receiving a compound fracture of the patella, with two inches' separation of the fragments. Wound sealed by pad of lint soaked in blood. Evaporating lotion applied; long posterior splint; no bad symptom. Wound healed without suppuration. When discharged he was able to walk without the help of crutches.

Mr. Manser:⁷—B. W—, aged thirty-six. Gunshot wound. Comminuted fracture of femur and patella; lodgment of pointed piece of gun-barrel in external condyle of femur. This was removed. Attempted antiseptic treatment. Erysipelas of thigh, scrotum, and abdomen. Antiseptics discontinued. Symptoms extremely grave, but patient ultimately recovered with firm fibrous ankylosis of knee.

Dr. John M'Diarmid:⁸—J. B—, aged sixty, a female drunkard, leapt out of window two storeys high and struck her left knee against the edge of a cart-wheel tire. Seen twelve hours afterwards. Transverse wound two inches and a half long opening into joint; patella fractured; lower fourth splintered; ligamentum patellæ divided. Loose fragments removed; wound washed with water, and lint steeped in 1 in 20 carbolic oil laid over the knee; long padded Gooch's splint applied. Treated by cold lotions, the wound itself being protected by lint steeped in carbolic oil. Favourable course; recovered; able to bend knee almost to a right angle and to walk up and down stairs.

Volkman⁹ mentions two cases of compound comminuted fracture of the patella, both of which recovered with movable joints. They were treated antiseptically.

Mr. Langley Browne reports a case:¹⁰—Isaac C—, aged thirty-five, received a wound from an axe on the left knee. Wound oblique, two inches and a half long. Patella divided into two pieces; knee-joint enormously distended with clot, which was turned out. Lister's dressings and treatment were employed. The joint was washed out with carbolic lotion, and was dressed for the first time on the ninth day; there was no pus; it was quite healthy. On the sixteenth day the wound had healed, and a pasteboard and starch splint was applied. On the thirtieth day he was discharged cured (no note as to separation of fragments, method of union, or mobility of joint).

Dr. Stimson:¹¹—Edward C—, aged twenty-two, fell from a pillar of an elevated railway, receiving a transverse fracture of the patella below the centre; there was no comminution or bruising. There was a clean-cut transverse wound an inch and a quarter long; the wound was dressed with carbolic gauze. Next day he was first seen by Dr. Stimson. The wound was then enlarged, the fragments sutured with silver wire, and gauze dressings applied. Some suppuration on the outer side of the lower portion of the thigh followed, otherwise the wound did well. When discharged, the patellar fragments had united by a fibrous band a quarter of an inch long. Ten days afterwards he could flex the joint 10° without pain. A month afterwards a small fragment of the patella just under the skin above the drainage opening on the outer side was removed. This had evidently been keeping up suppuration. When last seen the mobility of the joint was increasing.

Mr. W. Thomson:¹²—T. G— had been operated on by the late Mr. Amplett for ununited fracture of the patella. Osseous union was obtained, but the joint remained stiff. He fell and laid open the knee-joint, refracturing the patella at the seat of the old injury. Excision of the joint was

performed, and he recovered with some three-quarters of an inch shortening.

Mr. James has had two cases:—1. A. J—, aged twenty-seven, struck his knee against the sharp edge of a water-plug, receiving a lacerated wound two inches long, communicating with a transverse fracture of the patella, the fragments being widely separated. Cavity of joint freely laid open, and a quantity of blood effused into it. Blood squeezed out; long back splint; foot suspended; interrupted side outer splint; perforated zinc splint on inner side. Joint syringed out with carbolic oil (1 in 20). Lister's dressings and method. Dressed under spray every second day. On the eighth day a rise of temperature to 102°; otherwise no fever. The wound healed on the twenty-eighth day. "Three-quarters of an inch interval between the fragments; able to bend the knee slightly, and states that the amount of flexion is increasing; able to walk ten miles without a stick."¹³ 2. C. H—, aged thirty-five, half caste. Twenty-four hours before admission she jumped out of a vehicle while the horse was bolting and fell on to a heap of loose metal, against which her left knee struck with great violence. Compound fracture of the patella ensued, which was greatly comminuted; large lacerated wound across the front of the knee-joint. The wound was thoroughly washed with carbolic lotion and dressed antiseptically. Back splint suspension from cradle. Fever and pain for two days. Incision on the outer side of the joint. Fragments of the patella, which were widely separated and covered with decomposing clot, were removed. The extensor tendon and ligamentum patellæ were approximated by two sutures of gold wire and one of kangaroo tendon. Antiseptic dressings. Some sloughing and burrowing of pus on the outer side of the joint followed. Mr. James remarks: "Severe case; joint filled with road dirt; many hours since accident; from present condition I believe she will have fair joint motion in time."¹⁴

Mr. Davies-Colley has treated two cases of compound fracture of the patella antiseptically. In one case a silver wire was passed right through both fragments. He saw the man a few weeks ago; he could then walk well. His leg was nearly straight, and the range of movement was only 3°. The patella could be moved a little from side to side. Mr. Davies-Colley writes: "I thought that by passive motion he might improve it considerably, but I dared not bend it forcibly, as the bony union did not extend over the whole breadth of the patella. At the side of the bone was a deep notch left by the removal of a fragment. Since this case I have treated another patient under more favourable circumstances—i.e., from an hour or two after the receipt of the injury. I had not to wire the fragments, and bony union resulted with perfect movement, the condition of the wound having remained aseptic throughout."

I am indebted to Mr. Battle for the following case, which was under the care of Mr. Sydney Jones at St. Thomas's Hospital:—"A. B—, a male, aged nineteen, strongly built and heavy, fell down a lift, striking his knee on a bar below. The wound extended across the tendo patellæ, and there was comminuted fracture of the patella. The wound formed a flap over the front of and into the joint, and carried upward the greater part of the bone. The bone was wired soon after admission, with lateral drainage. The patient recovered, with partial movement. There was good union."

Summary of above cases.

Total cases, 20. All recovered: 12 with good movement, 5 with slight movement. In 3 ankylosis occurred (one after excision of joint).

Antiseptic treatment (without suture): 9 cases, of which 7 recovered with good movement, 1 with partial movement, and 1 with bony ankylosis.

Antiseptic suture: 5 cases, of which 2 recovered with good movement, 3 with partial movement.

Carbolic oil to wound: 2 cases, both of which recovered, with good movement.

Lint soaked in blood applied to wound: 1 case; good movement.

Removal of patellar fragments; suture of quadriceps to ligamentum patellæ: 1 case; slight movement.

Excision of knee: 1 case.

Antiseptic treatment for a time: 1 case; fibrous ankylosis of joint (complicated with erysipelas and lodgment of piece of gun-barrel in condyle of femur).

⁵ Ibid., June 9th, 1883.

⁶ Dublin Medical Journal, vol. lxxvi.

⁷ THE LANCET, Jan. 24th, 1880.

⁸ Braithwaite's Retrospect, 1876, vol. ii.

⁹ Edinburgh Medical Journal, 1875, p. 796.

¹⁰ Birm. Med. Review, 1881, p. 142.

¹¹ New York Med. Jour., 1883, vol. xxxvii., pp. 621-624.

¹² Brit. Med. Jour., Aug. 26th, 1882.

¹³ Austral. Med. Jour. (Melbourne, 1881), p. 400.

¹⁴ Ibid., 1884.