Victoria availed herself of the use of chloroform". Further on, Dittrick lauds the work of Hingson and Edwards, and concludes: "In this last notable advance (continuous caudal analgesia), emphasis is made that two experts are essential in modern obstetrics, the one in anæsthesia, the other in obstetrical technique".

CONCLUSIONS

1. Continuous caudal analgesia is a difficult technique and should not be attempted by anyone not trained in spinal or local procedures.

2. It provides adequate relief of pain during the first, second and third stages of labour. Operative procedure or manipulation may be adopted at any time without additional anæsthesia.

3. The second stage of labour is retarded, since the "battering ram" effect is not present, but if encouraged to bear down and if the anæsthesia is not too high, the patients who would otherwise deliver spontaneously, will do so under caudal analgesia.

4. They do not precipitate.

5. In our experience the incidence of operative interference was not increased even in primiparous women.

6. The patients recover quickly after delivery and express the desire to go home on the 5th, 6th or 7th day, and are ready to resume their full duties within 2 or 3 weeks post-partum.

7. In our experience the total labour time is considerably reduced, especially the first stage.

8. In none of our patients was there a severe hæmorrhage post-partum.

9. As a whole, the blood pressure is not affected, although a mild drop may occur, if anæsthesia is high.

REFERENCES

1. CATHELIN, M. F.: Une nouvelle d'injection rachidienne. Methode des injections epidurales par la procede du canal sacre. Applications a l'homme, *Compt. rend. Soc. de Biol.*, 1901, **53**: 452.
2. DOGLIOTTI, A. M.: Anæsthesia, S. B. Debour, Chicago, 1939.
3. DE TAKATS, G.: Local Anæsthesia, W. B. Saunders Co., Philadelphia, 1928.
4. ZWEIFEL, E.: The fatalities after sacral anæsthesia, abs., *J. Am. M. Ass.*, 1920, **74**: 1138.
5. LUNDY, J. S.: Clinical Anæsthesia, W. B. Saunders Co., Philadelphia, 1942.
6. BAPTISTI, A., JR.: Caudal anæsthesia in obstetrics, *Am. J. Obst. & Gyn.*, 1939, **38**: 642.
7. LEHMAN, A. H. AND MIETUS, A. C.: Caudal anæsthesia, *Surg., Gyn. & Obst.*, 1942, **74**: 63.
8. (*a*) EDWARDS, W. B. AND HINGSON, R. A.: Continuous caudal anæsthesia in obstetrics, *Am. J. Surg.*, 1942, **57**: 459.
   (*b*) HINGSON, R. A. AND SOUTHWORTH, J. L.: Continuous caudal anæsthesia, *Am. J. Surg.*, 1943, **58**: 93.
   (*c*) HINGSON, R. A. AND EDWARDS, W. B.: Continuous caudal anæsthesia during labour and delivery, *Anæsth. & Analg.*, 1942, **21**: 301.
   (*d*) HINGSON, R. A. AND EDWARDS, W. B.: Continuous caudal analgesia in obstetrics, *J. Am. M. Ass.*, 1943, **121**: 225.
9. LEMMON, W. T. AND PASCHAL, G. W., JR.: Continuous spinal anæsthesia with observations on the first 500 cases, *Pennsylvania M. J.*, 1941, **44**: 975.
10. GREADY, T. G. AND HESSELTINE, H. C.: Continuous caudal analgesia in obstetrics, *J. Am. M. Ass.*, 1943, **121**: 229.
11. VAUX, N. W.: (Quoted in editorial, *J. Am. M. Ass.*, 1943, **121**: 260.)
12. IRVING, F. R.: (Quoted in editorial, *J. Am. M. Ass.*, 1943, **121**: 260.
13. BLOCK, N. AND ROCHBERG, S.: Continuous caudal anæsthesia in obstetrics, *Am. J. Obst. & Gyn.*, 1943, **45**: 645.
14. DITTRICK, H.: Anæsthesia and childbed fever (Detroit), *Curr. Res. Anæs. & Anal.*, 1943, **22**: 180.
15. SIEVER, J. M. AND MOUSEL, L. H.: Continuous caudal anæsthesia in three hundred unselected obstetric cases, *J. Am. M. Ass.*, 1943, **122**: 424.
16. ADAMS, R. C., LUNDY, J. S. AND SELDON, T. H.: Continuous caudal anæsthesia or analgesia, *J. Am. M. Ass.*, 1943, **122**: 152.

TUBERCULOSIS OF BURSA IN THE REGION OF THE HIP JOINT

By Major J. Farr, R.C.A.M.C.

TUBERCULOSIS of bursæ in the region of the hip joint is not frequently seen, despite statements to the contrary in two of the standard texts of surgical anatomy.[1, 2] Indeed Wassersug[3] states there are only, "over 75 recorded cases of tuberculosis involving the great trochanter or the trochanteric bursæ". In the Massachusetts General Hospital from 1870 to 1920 the diagnosis of tuberculosis of the trochanter was made just five times.[4] In Wassersug's series of eighteen cases, in only two was there no evidence of a trochanteric bone lesion.

I wish to record two further cases of tuberculosis of the trochanteric bursa not involving bone and review the signs, symptoms, course and treatment of this lesion.

Tuberculous bursitis may occur at any age, but it is most common in young adults, with no special predilection for either sex. There may or may not be a frank tuberculous focus elsewhere. The presenting symptom is a swelling in the region of the hip joint. Pain may or may not be present. It is perhaps more usual for the patient to complain that the "hip becomes weak" on exertion, and after exercise a limp is not unusual. The swelling usually presents on the lateral aspect of the hip just posterior to the great trochanter, and in my experience is characterized by being subcutaneous and fairly well circumscribed. While the process is in its initial stage there is no doubt that it may be confined deep to the gluteus maximus and, in that case, any swelling would be diffuse. But in the cases herein recorded, by the time the patients presented themselves, the swelling

was plainly subcutaneous. The swelling is fluctuant, and to avoid Milgram's complaint that many cases of so-called tuberculous bursitis are by no means proved,[5] the swelling should be aspirated and the fluid subjected to the usual laboratory examination.

In my opinion the proper treatment is excision of the affected bursa provided that the condition of the patient is satisfactory, partial closure of the incision, and packing with gauze, impregnated with "bipp". In my small experience the hip is best immobilized and the packing changed once weekly through a window in the spica. However, it must be stated that many do not agree that immobilization of the part is necessary, but it would seem that local rest and the usual supportive treatment is as necessary for tuberculosis of bursæ as for tuberculosis elsewhere, and that impression is strengthened by the course of these cases below recorded.

CASE 1

M.H. Female, aged 18 years.

September 2, 1940.—Complained of swelling on the lateral aspect of the left hip for 5 months. No history of trauma, nor has pain been at any time noticeable. Temperature 98°; no limitation of movement of the hip and only very slight wasting. A fluctuant swelling present just posterior to the great trochanter. X-ray of the affected hip was negative. The swelling was aspirated and, while cloudy, no organisms were noted. A guinea pig was not injected due to the oversight of a technician. The culture was sterile.

September 10, 1940.—A vertical incision was made over the swelling. Flaps of skin were raised with difficulty, and the swelling partially mobilized. The swelling was opened and watery pus, not under tension, escaped. The mobilized wall of the sac was excised and on its deep aspect, which lay on the tendinous insertion of the gluteus maximus, there was seen to be a foramen which penetrated the muscle and directly communicated with the bursa between the gluteus maximus and the great trochanter, and also the bursa between the glutei maximus and medius. The lining of the bursæ and their diverticulum through the gluteus maximus were covered with profuse greyish red granulations.

As much of the bursæ was excised as possible and the inaccessible parts were thoroughly curetted. The gross changes were very suggestive of tuberculosis and thinking a mixed infection should, if possible, be avoided, the incision was completely closed with interrupted S.W.G.

September 25, 1940.—The incision healed by primary intention. Pathological report on the wall of the bursa excised was "Chronic inflammation". Despite the inconclusive pathological report, it was felt that the lesion of the bursa was tuberculous. This opinion was confirmed by Mr. J. N. Sankey of Birmingham. At this time the sedimentation rate was 102 mm. per hour.

October 3, 1940.—The swelling was beginning to recur. The scar was excised and the subcutaneous collection of fluid opened. There was now no frank communication through the gluteus maximus. The walls containing the cyst-like collection of fluid were curetted. The cavity was then packed with gauze impregnated with "bipp" and closed, except for 2 inches at the lower extremity of the incision. This packing was changed weekly.

October 10, 1940.—Patient was very active in bed, constantly moving the affected limb in an optimistic attempt to demonstrate that there was nothing really wrong with the hip. A plaster spica was applied with a window on its lateral aspect to permit dressings weekly.

November 15, 1940.—Patient now complained of cough. X-ray revealed tuberculosis in left apex and there were small numbers of acid-fast bacilli present in the sputum.

December 11, 1940.—The patient was transferred to the Groundslow Sanatorium.

On June 10, 1941, the report from Dr. Wilson, the medical superintendent, was: "The spica was removed on February 10, 1941. The scar was well healed and there were no sinuses. The lung condition is very much improved and she has no cough or sputum." Dr. Wilson added that he had never seen a similar case.

Despite the pathological report of mere "chronic inflammation", I feel that this case can without doubt be regarded as tuberculosis of a bursa.

CASE 2

Male, aged 20 years (Corporal, Royal Engineers—European).

April, 1941.—Sent for consultation by his R.M.O. because of a swelling in the region of left hip which had first appeared 2 months previously. The swelling did not cause any pain but again the patient complained of weakness on exertion and pleaded to be excused route marches.

Examination showed a fairly circumscribed fluctuant swelling behind and close to the left great trochanter. There was no limitation of movement of the affected joint. X-rays of the affected hip and also chest were negative. The clinical findings and history were so similar to those of the previous case that a tentative diagnosis of tuberculosis of the trochanteric bursa was made. The swelling was aspirated and 50 c.c. of the fluid were sent for laboratory examination. Major John Boycott reported acid-fast bacilli present in a direct smear after centrifuging. Once the diagnosis was established the man was found unfit for further military service and arrangements were made for him to be received into a civilian institution, where he could receive sanatorium care after surgical intervention.

On September 22, 1941, L. P. Leask, Surgical Registrar, County Sanatorium, Harefield, Middlesex, very kindly reported his condition to me as follows: "*Re* D. Admitted here July 29, 1941; two months previously Mr. Levi had operated on him for tuberculous bursitis of the left hip. He removed the bursa entirely and found no connection with bone or hip joint. When he was admitted here he had a sinus in the wound about 1 inch long but this has since healed up. X-rays have been taken on two occasions since admission, but at neither time was there any change in the bone of the great trochanter. There is still a small raw patch in the wound. We have found no tubercle in his chest."

Before this patient was discharged from the army, I requested him to write to me and let me know his progress. In September, 1941, he wrote that he was feeling well but that there were two broken-down areas in the original incision that were discharging golden-coloured fluid, and that another area looked as if it was going to break, and that he was out of bed.

I have had no further reports as to his progress as I have been abroad, but it is evident that this patient still had sinuses five months after operation.

CASE 3

On June 1, 1943, I operated on a third case, an African male. The swelling obliterated the gluteal fold and again was subcutaneous. At operation, the origin of the bursitis was found to be the bursa between the ischial tuberosity and edge of the gluteus maximus, and the subcutaneous swelling was its diverticulum. Acid-fast bacilli were present on a direct smear of the fluid aspirating preoperatively.

Operation is so recent in this case that it is not possible to give any report as to progress.

SUMMARY AND CONCLUSIONS

1. Records of three cases of tuberculosis of the trochanteric bursa not involving bone are submitted.

2. From the experience in these cases it would appear advisable to immobilize the hip following operation until healing is complete.

I am grateful to the D.M.S., E.A. Command and the Commanding Officer of No. 1 (E.A.) General Hospital for their permission to publish these observations.

REFERENCES

1. BEESLY AND JOHNSTON: Manual of Surgical Anatomy, 3rd Ed., Oxford, 1930.
2. CALLANDER: Surgical Anatomy, 3rd ed., Saunders, Phila.
3. WASSERSUG, W.: *J. Bone & Joint Surg.*, 1940, **22**: 1075.
4. *Boston M. & S. J.*, 1921, **165**: 107. Quoted by W. Wassersug.
5. MILGRAM, J. E.: *J. Am. M. Ass.*, 1931, **97**: 232.

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Case Report

HERNIA OF THE STOMACH THROUGH THE RIGHT SIDE OF THE DIAPHRAGM

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On March 31, 1942, a 36-year old aero engine mechanic was carried into the station sick quarters at 10.00 p.m. in a condition approaching shock. His symptoms were: dyspnœa, acute distension of the upper abdomen, thready pulse, cold sweat, low temperature, acute agony which increased on lying flat, and inability to speak. The lower abdomen was not distended. Five minutes previous to the M.O.'s arrival an orderly had given him an emetic at his own request ("if I could only vomit up those sandwiches") but this had increased his distension and shock. A stomach pump was introduced and this was followed by a spectacular disappearance of his distension—like a collapsing balloon.

Within ten minutes he was feeling well enough to walk and was able to give the following history: No symptoms previous to January, 1932. At this time, while playing hockey, he was rammed in the solar plexus by the butt end of the goaler's stick and was knocked unconscious for several minutes. There were no after affects at that time. Married in August, 1933, and shortly after that he first began to notice a tendency of his stomach to "bloat" with meals. This was intermittent, only occurring on the average about once per month for one to two days. In 1938 he had an attack of acute distension; a stomach pump brought immediate relief. Since that time he has continued to have about one attack per month without prostration. Usually, for one to three days previous to an attack he had noticed that his bowels did not move as freely or with the same regularity as usual. During the actual day or two of attacks he had a sensation of bloating when he ate, which passed away within an hour if he stopped eating immediately.

At 5.30 p.m. on the day of his recent attack, he had eaten several ham sandwiches and shortly after this had begun to feel bloated. A friend suggested soda bicarbonate, something he had never used with previous attacks; this however increased the bloating and made him nauseated, but he had been unable to vomit. The distension had steadily increased until he began to feel acute pain and difficulty in breathing. His companions carried him into the station sick quarters. Following passage of the stomach tube he was given morphine, gr. ¼, and heat; he slept comfortably all night and was symptomless the next day. Subsequent barium series revealed a herniation of the stomach through the right diaphragm.

It was decided to retain this man for home service only and to put a ceiling on him of 5,000 feet as it was felt that acute distension due to altitude decompression thus would be avoided safely. A complete description of his condition with diagrams was presented to him, and instructions on how to avoid gas formation by food; also the pros and cons of operative interference were discussed with him, and he himself felt that he would be able to carry on safely. As operation is usually avoided in these cases where the symptoms are mild and