PAROTITIS FOLLOWING ABDOMINAL SECTION.

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Sequelae and complications incident to surgical operations upon the abdominal and pelvic viscera are of interest alike to the specialist and to the general practitioner. Inflammation and swelling of the parotid gland, as a postoperative complication of abdominal and pelvic surgery, are of sufficient rarity to demand the careful recording of every case. The relation of the parotid gland to the viscera of the abdomen and pelvis is one of the many unexplained problems that exist to-day.

A careful review of the anatomy of the parotid gland fails to explain why the parotid glands, some days after the removal of the ovaries, become congested, swell and sometimes suppurate. Many authors, among them Stephen Paget, Bumm and Goodell, believe the connection to be a nervous one, which nervous connection is made through the great sympathetic system. These men cite the complication of orchitis following parotitis in the male as an argument in favor of the sympathetic relation between the testis and the parotid, and state further that a

similar condition no doubt exists in the female; but the position of the ovary and the reluctance of women to submit to an examination for a slight pain in the ovarian region are sufficient reasons for many cases passing unnoticed. Some investigators state that secondary parotitis is caused by toxins being carried from the seat of the abdominal operation to the parotid gland by way of the lymph and blood channels. But the advocates of this theory fail to exxplain why these toxic agents exert a selective action for the neck organs and why pyemia and septicemia do not accompany every case of secondary parotitis. To state that there is a sympathetic neural connection between the parotid gland and the pelvic and abdominal viscera is simply one way of masking our ignorance, but until someone produces a more plausible theory we shall be compelled to accept this in lieu of anything better.

Before taking up and reviewing the cases of secondary parotitis reported in the literature, I wish, first, briefly and succinctly to report a case of this kind following a salpingo-ovariectomy occurring in Dr. Peterson's service at the Hospital of the University of Michigan.

Miss E. G., aged 21, was admitted to the gynecologic service of the University Hospital, October 9, 1901. Her family history was negative. Menstruation appeared at the age of ten, and has been regular both as to time and duration up to two years ago, when the present illness began. She has always been troubled with constipation and frequent burning micturition, and she states that she has had "malaria" nearly every summer for a number of years.

The present trouble began two years ago with painful menstruation and a dull heavy pain in the pelvis. She has had a gradually increasing leucorrheal discharge with a history of bladder trouble, together with severe pelvic inflammation following the taking of a heavy cold last June. Two years ago the increased leucorrheal discharge was treated with a purple solution. One week before admission to the Hospital she had a severe attack of pain in the right iliac region, controlled only by opiates. She has been confined to the bed ever since by severe pains in the back and lower abdomen.

Physical examination at entrance showed the uterus slightly retroverted with the fundus carried to the left. The whole organ lay forward and under the pubes. The posterior cul-de-sac was occupied by a semi-fluctuating mass, more pronounced in the right vaginal fornix. Satisfactory abdominal palpation was impossible owing to extreme tenderness. The night following this examination, although no instruments had been used, the patient was taken with a severe chill followed by elevation of temperature and pulse. The former was 103°. It was at

once decided that surgical intervention was necessary, so an opening was made in the anterior cul-de-sac. Examination showed many firm adhesions binding the pelvic organs together in one solid mass. During the internal palpation of the pelvis a large quantity of thin, milky fluid escaped through the vaginal opening. The probability of tubercular peritonitis was considered at this time, so the wound was packed with gauze and allowed to drain. Three days later, since the temperature and pulse had not fallen as a result of the exploratory vaginal incision, a radical abdominal operation was decided upon, although the patient's pulse and temperature were high and her condition weak.

Operation, Oct. 17, 1901, by Dr. Peterson. The uterus was found lying high up in the pelvis with a coil of the small intestine adhering to it. Bilateral pus tubes with their corresponding ovaries were removed. The appendix was club-shaped and adherent to the right tube, and was also removed. While the left tube was being separated from its adhesions, it was ruptured and pus escaped into the pelvis. After a thorough irrigation of the abdominal cavity with salt solution and the passing of a gauze strip through the former opening into the anterior cul-de-sac, the abdominal wound was closed with through and through silk-worm gut sutures. Although the patient suffered severe shock by the operation, she reacted to the use of salines administered both subcutaneously and per rectum. Four days later the gauze strip was removed from the vagina. It had a very foul smelling odor due probably to a fecal fistula as gas escaped from the vagina during its removal. Notwithstanding the drainage through the anterior cul-de-sac the pulse and temperature still remained high. It was suspected that infection of the abdominal wound had taken place but examination of the wound showed neither pain nor tenderness on pressure. Neither could induration be elicited on deep palpation. It was thought that infection of the abdominal wound might have occurred from septic matter traveling upward by way of the gauze strip, whose lower end was contaminated by the discharges from the fecal fistula. Three days later a swelling was noticed below the angle of the right jaw. On palpation this swelling was found to be hard, firm and inelastic, and to involve the right parotid gland. The mass below the ear was very tender upon pressure and it extended from the lobe of the ear well down the neck and from the angle of the jaw to behind the ear. Nine days after the abdominal operation, the wound was again inspected and some induration found on both sides of the incision. About four ounces of thick, creamy, foul smelling pus was evacuated from the reopened wound. The opening was thoroughly irrigated with salt solution and

a rubber drainage tube inserted. Smears made of the discharge showed a short thick bacillus. Some of the fluid was sent to the bacteriologic laboratory for analysis, and the colon bacillus was isolated. The swelling under the right ear had been gradually increasing both in size and tenderness. The mass had however, lost its firm inelastic consistency and was found on Oct. 31, or fifteen days after the abdominal operation, to possess some fluctuation. Two days later, incision gave exit to about four ounces of thick, creamy pus. Bacteriologic examination of this pus showed the staphylococcus pyogenes aureus. From this time on the patient made an uneventful recovery and was discharged Dec. 16, 1901, 67 days after admission.

Epicrisis: A very intimate connection doubtless exists between the organs of the neck and those of the abdomen and pelvis. Swelling and congestion of the cervical glands, have often been noticed in the lower animals during the breeding season. Increased salivation is frequently one of the phenomena of pregnancy, while in disease of the ovaries, the secretion of the salivary glands is generally diminished. Connection between organs as remote as those of the neck and those of the abdomen and pelvis can only exist through the medium of the sympathetic nerous system; any abnormal disturbance of the abdominal and pelvic viscera must needs be felt in the cervical glands. Excessive stimuli, traveling along the great sympathetic chain, are exploded upon the salivary glands, especially upon the parotid glands. These nerve explosions cause swelling and congestion of the parotid, greatly impairing its normal function. Its secretion is lessened and often stopped. This may explain the cause of excessive thirst and dry mouth in patients after a laparotomy, especially following an ovariotomy. The germs, that normally have their habitat in the mouth, can readily travel up Steno's duct and infect the parotid gland, whose resistance to infection has been greatly lessened and whose tissue rendered more favorable to germ growth. All cases of secondary parotitis do not suppurate, as will be shown presently, but this may be explained by their function being impaired to a less degree, to their greater resistance to germ growth, and to the medium being less favorable for microbic development.

I have been able to collect from the literature some fifty cases of parotitis following abdominal section. A résumé of these cases, together with the one I have reported, will show many interesting facts regarding this rare complication. Of the 51 cases, 7 were males and 44 females. Twenty-eight were ovariotomies and the remaining 23 were operations upon the abdominal and pelvic viscera, varying from appendectomies to hysterectomies. That there was no fixed period of

incubation is also worthy of note. Nine occured on the third day, 5 on the seventh, 8 on the sixth, and 5 each on the fourth and fifth days, so that 32 out of 51 came the third to the seventh day. The remaining 19 cases of my tabulation ranged from the second to the twelfth days exclusive of the periods above mentioned. Bumm, in observations on 17 cases, made the average on the fourth to the tenth day, and Mörricke in his report of 5 cases places the period of incubation from the seventh to the fourteenth day.

Side Involved.—In 16 cases, both sides were attacked. In 15, the right, and in 13, the left parotid gland was the seat of the swelling. In 7 cases, the side was not specified.

Suppuration.—Pus was present in 20 and absent in 31 cases.

Bacteriology.—It is unfortunate that the bacteriology of almost all the cases reported in the literature has not been worked out. Bumm reports a case in which the staphylococcus pyogenes aureus was isolated. The same germ was found in the case reported above by me. In a large number of the cases reported in the literature, the complication of secondary parotitis was mentioned only incidentally in the convalescence so that accurate conclusions cannot be drawn.

Mortality.—Thirteen died and 38 recovered. And of the 13 deaths, pus was present in 9 cases and absent in 4. This would to some extent justify the statement of Paget, who remarked that the deaths were not due to the suppuration of the gland, but because the patients were going to die, the gland suppurated.

I have appended a tabulated list of the 51 cases, a careful perusal of which may be of interest to those concerned with abdominal and pelvic surgery.

Conclusions:

1. There is an intimate relation between the parotid gland and the abdominal and pelvic viscera.

2. This close relation probably exists through the medium of the sympathetic nervous system.

3. Suppuration or non-suppuration of the parotid gland in these cases depends entirely upon the local conditions in the gland.

4. This complication may follow any surgical operation upon the viscera of the abdomen and pelvis but it occurs more often after an ovariotomy.

5. The patient's life is not jeopardized *per se* by the occurrence of this complication

6. The appearance of the parotid bubo usually marks a turning point in the disease.

TABLE OF CASES.

NO.	SEX	AGE	OPERATION	PERIOD OF INCUBATION	SIDE INVOLVED	PUS	RESULT	REPORTED BY
1	F	33	Removal of ovarian tumor	5 days	Right	—	† in 6 das.	Mundé[20]
2	F	40	Ovariotomy	10 days	Left	+	† in 19 das.	Bantock[1]
3	F	32	do	R. 11 days L. 4 days	Both	+	Recovery	Mőricke[21]
4	F	48	do	6 days	Left	+	† on 35th day	do
5	F	65	do	do	Right	+	† on 9th day	do
6	F	60	do	do	do	—	Recovery	do
7	F	34	do	7 days	do	—	do	do
8	F	49	Removal of uterine tumor	6 days	Left	—	do	Mann[18]
9	F	17	Gastrotomy	R. few days L. next day	Both	—	do	Thornton[19]
10	F	—	Removal of ovarian tumor	3 days	Left	—	do	Küster[22]
11	M	30	Abdominal section	2 days	Right	—	do	Barlow[4]
12	F	—	Ovariotomy	9 days	Left	+	† in 32 das.	Goodell[13]
13	F	37	do	3 days R. 3 days	Both	—	Recovery	do
14	F	21	Oophorectomy	L. few days	do	—	do	do
15	F	—	Ovariotomy	.....	do	—	† in 3 wks.	Sutton[16]
16	F	65	do	3 days	do	—	† in 6 days.	Johnson[15]
17	F	—	do	.....	.....	+	†	Mann[18]
18	F	—	Hysterectomy	7 days	One	—	Recovery	do
19	M	—	Penetrating wound of abdomen	.....	.....	—	do	do
20	F	54	Hysterectomy	5 days	Left	—	do	Reamy[23]
21	F	52	Ovariotomy	8 days	Right	—	do	M'Donald[24]
22	F	—	do	.....	.....	—	do	do
23	F	44	do	.....	Both	—	do	Pawlof[25]
24	F	44	do	12 days	do	+	do	Slaw-janisky[26]
25	F	35	do	3 days	Right	—	do	von Preuschen[27]
26	M	49	Bullet wound of stomach	46 days after injury	do	+	† in 64 das.	Paget[6]
27	F	41	Gastrotomy	2 days	One	+	† in 30 das.	Clarke[3]
28	F	14	Enterostomy	9 days	Right	—	Recovery	Duckworth[12]
29	F	60	Abdominal section	6 days	do	—	† in 9 das.	Barker[2]
30	M	40	Herniotomy	3 days	Left	—	Recovery	Dashwood[10]
31	M	—	Removal of omentum	.....	.....	+	†	S. Paget[28]
32	F	50	Abdominal section	11 days	Right	—	Recovery	Hulke[17]
33	F	46	Removal of ovarian tumor	11 days	do	+	do	Keith[29]
34	F	26	Ovariotomy	6 days	Left	—	do	Bumm[5]
35	F	58	Intestinal obstruction operation	4 days	do	—	do	S. Paget[28]
36	F	—	.....	4 days	do	+	do	Jellet[30]
37	F	29	Salpingo-ovariectomy	5 days	.....	+	do	Brewis[7]
38	F	45	Ovariotomy	5 days	Right	+	do	Everke[31]
39	F	—	Removal of ovarian cyst	R. 17 days L. 24 days	Both	+	† in 7 wks.	do
40	F	32	Abdominal section	2 days	Both	+	Recovery	Ricketts[32]
41	F	—	Ovariotomy	.....	do	—	do	Frederick[14]
42	F	40	Removal of uterine tumor	L. 7 days R. 9 days	do	+	do	Koetschau[33]
43	F	36	do do	R. 5 days L. 7 days	do	+	do	Ahern[2]
44	F	21	Gastric ulcer operation	3 days	do	—	do	Hawkins[16]
45	F	35	Ovariotomy	8 days	Left	—	do	Addinsell[8]
46	F	64	Removal of ovarian cyst	15 days	do	+	do	Malcolm[18]
47	M	13	Suppurative peritonitis operation	L. 3 days R. 4 days	Both	—	do	Addenbrooke[1]
48	M	20	Appendectomy	L. 3 days R. 4 days	do	—	do	Elder[22]
49	F	22	do	6 days	Right	—	do	Thomas[34]
50	F	40	Hysterectomy	6 days	Left	—	do	Peterson[35]
51	F	21	Ovariotomy	7 days	Right	+	do	Morley[36]

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