

MALIGNANT DEGENERATION IN DERMOID CYST

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Four cases of malignant degeneration were observed among 62 cases of the dermoid cyst at the Department of Obst. & Gynec. of the Chung-hsing Municipal Hospital of Taipei over a period of 10 years. The outcome of these cases, except in Case 2, was fatal. Incomplete operation and incomplete post-operative anticancer treatment were probably accountable for the poor outcome. It is noteworthy that Case 2 could survive almost 4 years in spite of preoperative spontaneous rupture of the malignant dermoid cyst; early initiation of multiple anticancer therapy including Co. 60, Mitomycin C, and 5-FU, energetic repeat lavage of the peritoneal cavity and vaginal drainage may have exerted beneficial effects. The poor outcome in the literature and in our series, might have resulted from the prevailing preconceived belief in benignity of the dermoid cyst and from inaccessibility of the concealed malignancy in the dermoid cyst at operation, which would play a great role in incomplete operation. Too much emphasis cannot be laid on the pathological examination of the operative specimens, particularly on the part of busy practicing gynecologists. On the basis of our experience and the results in the literature a proposal of surgical regimens for dermoid cyst was made.

Dermoid cyst of the ovary was first discovered by Johannes Schultetus in 1659 in the ovarian tumors at autopsy.⁽¹⁾ Blackwell^(2,3) and his associates proposed a different term "benign cyst teratoma of the ovary" because of its frequent inclusion of elements of all three germ layers, or at least two. The dermoid cyst is a common ovarian tumor comprising 5 to 25% of all ovarian neoplasms. The outcome in the simple dermoid cyst is generally excellent. When a dermoid cyst has become malignant, however, the prognosis is grave. The present paper, using our own materials emphasizes the import-

ance of pathological examination of operative specimen, in view of the prevailing concept of the benign nature of the dermoid cyst, resulting in too frequent negligence of pathological examination, particularly by busy practicing gynecologists.

MATERIAL

Since January 1, 1963 to Dec. 31, 1972 (10 years period), we encountered 4 cases of malignant degeneration among 62 cases of dermoid cyst at the Department of Obst. & Gynec., the Chung-hsing Municipal Hospital of Taipei. In view of the clinical and pathological

significance, we present here the details of the four individual cases in which malignant degeneration was proven by post-operative pathological examination.

CASE REPORT

Case 1. P. C. Wu, a 50 years old house wife, Gravida 0, Para 0; underwent panhysterectomy and colostomy. On January 13 1969, the patient complained of abdominal pain and newborn head sized mass in the pelvis about 2 months in duration. At laparotomy, there was a cystic mass measuring $13 \times 13 \times 7$ cm arising from the left adnexa with irregular surface and marked adhesion to omentum and sigmoid colon. The urinary bladder was also invaded by whitish fragile tumorous tissue. No ascitic fluid was found. Total hysterectomy with bilateral salpingo-oophorectomy, colostomy & partial cystectomy were performed. The pathological diagnosis was malignant change of dermoid cyst. The patient refused any anti-cancer treatment. She was discharged on February 13, 1969 and died soon after the discharge. Pathological examination revealed adnexal tumor which was made up of whitish cancerous tissue with a cystic cavity in the center of the tumor. The cystic cavity still contained several dark hairs. The inner surface of the cyst was partly smooth & partly nodular in appearance. The cystic space measured $4 \times 3 \times 2$ cm. The left tube measured 4 cm in length and 0.5 cm in diameter. The isthmic portion of the Fallopian tube could be identified, but the distal end was fused with the left ovarian tumor. The uterus

measured $7 \times 5 \times 2.5$ cm. It was nearly normal in size and shape except for five small subserosal myomatous nodules measuring up to 1.5 cm in diameter on right anterior fundul region. The endometrial cavity, myometrium and portio were nearly normal without tumor invasion. The right adnexa was not remarkable. The sigmoid colon was almost completely invaded by tumor tissue but the mucosa was still free from invasion. Three out of five perirectal lymph nodes contained metastatic epidermoid carcinoma. The largest lymph node measured 1 cm in diameter. The malignant tissue involved the left Fallopian tube, interstitial part of left Fallopian tube, caecum, rectum, urinary bladder and perirectal lymph nodes.

Case 2. M. A. C. Huang Gravida 7, Para 6, aged 51, a house wife, was admitted in February 1971. She noticed abdominal distention since 2 months ago. In spite of the gynecologist's repeated urgings she refused operation to the last moment, when she had a sudden attack of abdominal pain and abdominal distension. Emergency operation disclosed the abdominal cavity was full of greasy dirty fluid, which was emerging from a ruptured hole of a tumor containing hair. After clearing up the greasy fluid by repeated lavage with saline solution, bilateral adnexectomy was performed; hysterectomy was not performed because of poor operative risk. Pathological report: The ovarian cyst measured $18 \times 12 \times 7$ cm, weighing 860 gm. The cut surface was rather smooth, but partly covered by small amount of fibrous tissue. On section,

the cyst was found to be filled up with yellowish greasy substance mixed with some light greenish mucous fluid. A few black hairs were also noted. Several fibrous incomplete septum passing through the cystic cavity were noted. Most parts of the cystic wall were thin and inner surface was covered by dirty yellowish necrotic substance, but there was a whitish firm tumorous protuberance measuring 6×5×2 cm in size. A questionable mammillary body was found in the cystic wall. It was a small nodule measuring 3×2×2 cm and contained a small hard bony tissue. Final pathological diagnosis was epidermoid carcinoma arising from the dermoid cyst.

The patient received anticancer treatment consisting of Co 60 irradiation 4500 r, Mitomycin C 40 mg, and 5-FU 2500 mg. She was discharged on March 21, 1971 and is still living and well.

Case 3. E. C. Lai, age 22, a senior high school student, was admitted on January 17, 1972 because of abdominal enlargement for one month. Physical examination revealed negative finding except for a hard lobulated newborn head sized mass in the lower abdomen. Chest X-ray and lower G. I. series were negative. A large tumor shadow was demonstrated in the K. U. B., otherwise, the laboratory data were within normal limits. Laparotomy was done on January 19, 1972 under the diagnosis of ovarian tumor. A newborn-head sized ovarian cyst with partial solid portion measuring 7×6.5×3 cm was found in the left ovary which tightly adhered to the serosa of the sigmoid colon. The uterus

and right adnexa appeared to be normal. There was no evidence of distant spread of the tumor. Left adnexectomy was performed, which was followed by Cobalt 60 irradiation 3600 r. Patient died on Nov. 30, 1972. Pathological report: Epidermoid carcinoma developed in the dermoid cyst and directly infiltrated into the surrounding soft tissues at its base.

Case 4. W. Huang Gravida 12 Para 11. age 48, a house wife, was admitted on April 11, 1972 for lower abdominal tumor. She had noticed rapidly grown tumor since one month and half ago, when she was told of diagnosis of ovarian tumor; however she had ignored the diagnosis. Past history and family history were not remarkable. Physical examination revealed a newborn-head sized tumor palpable in the lower abdomen. The uterus was retroverted, small in size and compressed by a large cystic mass. The right adnexa was negative. Cervical erosion was found. Panhysterectomy and bilateral adnexectomy were done. Treatment and course: Following the surgical resection, anticancer chemotherapy with Mitomycin C was given 4 mg i. v. every other day totalling 40 mg. General condition had been downhill after operation. She died on July 15, 1972, 95 days after hospitalization. Pathological examination: The left Fallopian tube was tightly adhered to the left ovarian cyst measuring 19×15×7 cm and weighing 1700 gm. The anterior surface of tumor was smooth but many areas of induration were palpable. On cutting, it was a biloculat-

ed cyst, filled with yellowish turbid fluid. Two lumps of yellowish greasy materials mixed with hair were also noted in the lumen. There were rather well defined whitish cancerous patches measuring up to 9×6×3 cm in size seen on the inner surface of cystic wall. No definite mammillary body was found. The cyst wall was rather thin in most parts except where the cancerous patches were attached. The inner surface of the cyst was rather dirty and necrotic. Pathological examination revealed a picture of epidermoid carcinoma which arose from the inner surface of left ovarian dermoid cyst. The inner surface of the remaining parts were mostly desquamated but small parts were covered by stratified squamous epithelium. The left Fallopian tube and right adnexa were not remarkable.

Comment

1. Incidence of malignant change:

Although equally categorized as the teratoid tumor, the dermoid cyst is

Table 1. Age

	dermoid cyst	malignant change
20	4	1
21 25	14	
26 30	15	
31 35	12	
36 40	5	
41 45	3	
46 50	6	2
51 55	1	1
56 60	0	
61 over	2	
Total	62	4

Incidence 6.45%

regarded as a benign tumor. When compared with the malignant nature of teratoma, the difference between the two tumors resides in the degree of the differentiation of the germinal elements which they commonly have. Malignant degeneration, however, may occasionally occur in the dermoid cyst, mostly in carcinomatous pattern, particularly of epidermoid variety, though rarely in sarcomatous pattern. Pesch⁽⁷⁾ reported in 1857 the first case of carcinomatous degeneration of the dermoid cyst, while Pommier⁽¹⁰⁾ recorded in 1864 the first case of sarcomatous degeneration of these tumor. Frankl^(4,5) stated that there were 60 cases of carcinomatous degeneration of the dermoid cyst of the ovary in the literature up to 1920. However, in 1928 Masson and Ochsenhirth⁽⁶⁾ stated that only 33 cases of these cases could be accepted as malignant degeneration. Peterson suggested that the ratio of malignant degeneration

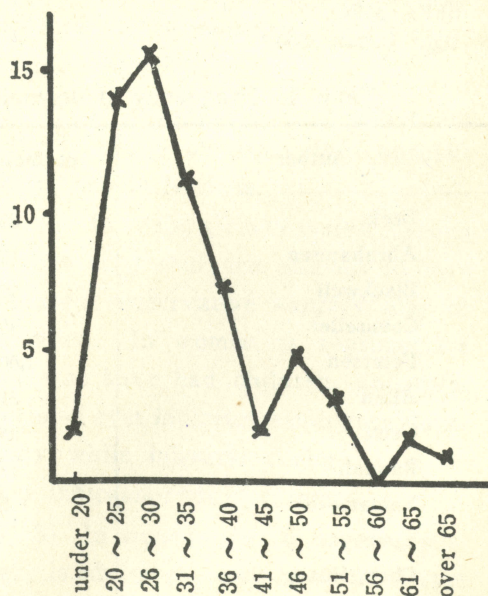


Fig. 1.

tion is only 1% of all dermoid cyst. Novak estimated it as 1 to 3%. During the past 10 year period, from January 1, 1963 to Dec. 31, 1972 there were 62 cases of dermoid cyst with 4 cases of malignant degeneration observed at the Department of Obst. & Gynec., the Municipal Hospital Chung-hsing of Taipei. The incidence of malignant degeneration of dermoid cyst is therefore 6.45% (Table 4). According to the statistic data of the Department of Pathology, Taipei Medical College⁽¹⁸⁾, from 1963 to 1969 there were 76 cases of dermoid cyst with five malignant degeneration cases; the incidence is 6.18%. Honer's^(18,19) statistic data varied from 1 to 5.5%.

2. Age distribution:

Dermoid cyst is the most common tumor of young girls, Geoger and Booth in separate articles indicate that dermoid cyst is the common tumor found in infancy, in childhood and during pregnancy.⁽¹⁶⁾ It may occur however at any age. According to the statistics at the Department of Pathology, Taipei Medical College⁽¹⁸⁾ the youngest age was 8 and oldest was 68. In the Boston Hospital of Women the youngest was

Table 2. Side

right	left	bilateral	total
27	29(4)	6	62(4)

(): cases of malignant change

Table 3. Treatment & Prognosis

1. P. C. Wu	S	expired	1 month
2. M. A. C. H.	SMF + 145	alive	4 years
3. E. C. L.	S136	expired	11 months
4. W. H.	SM	expired	3 months

S: surgical resection
SFF: 5-FU
136: Cobalt 3600 r

M: Mitomycin C 40 mg
145: Cobalt 60 4500 r

Table 4. Frequency of dermoid cyst & malignant degeneration

Author	dermoid cyst	malignant	Frequency (%)
Beck	297	1	0.3
Abrahamsen	125	0	0
Blackwell	100	3	3
Counsellor	408	7	1.7
Peterson	1,007	8	0.8
Allan	313	3	1.0
Gelst	183	2	1.0
Randall	170	1	0.6
Yamamoto	52	1	1.9
Koubayasi	47	1	2.1
Chen, Huang, Roan	76	5	6.18
Roan, Hsu, Chen	62	4	6.45

a 7 week infant and oldest was 80. The youngest age recorded by Noguchi and Louser⁽¹²⁾ was 16 months. The malignant degeneration in Japan,^(12,14,15) the range was 24 to 51 years. In our series the youngest was 22 and the oldest 51; the average is 42.7 years old (Table 1, Fig. 1) The incidence of malignant degeneration increased in the age between 45 and 55. Honer reported that patient over age of 40 constitutes more than 70% of the malignant degeneration.

4. Side:

Novak reported that 25 per cent of dermoid cyst were bilateral; but in our series, of 62 cases 27 were in the right side (43.5%), 29 in the left side (46.77%), and 6 bilateral (9.69%) (Table 2). It is very interesting to note that in our series all 4 cases of the malignant degeneration arose in the left side. Honer^(18,19) has reported 2 cases of carcinomatous degeneration of ovarian dermoid cyst also arising in left side.

4. Symptoms and signs:

There are no clear-cut clinical symptoms of the malignant degeneration although certain clues may be furnished by rapidly grown tumor and rapid deterioration of the patient. In some of our cases either rapid enlargement of abdominal tumor or loss of weight suggested such possibilities before operation.

5. Treatment and Prognosis:

Novak⁽¹¹⁾ considered the prognosis of malignant degenerated dermoid cyst extremely poor, approximating only 6% five years survival. In a series of 33 cases collected from the literature Masson and Ochsentirt⁽⁶⁰⁾ stated that a

follow-up was given in 18 cases all died from recurrences. It is very interesting to note that in our Case 2 could live for almost four years in spite of preoperative spontaneous rupture of the malignant cyst. Energetic repeat lavage of the peritoneal cavity, vaginal drainage, early initiation of multiple anticancer treatments (Co 60, Mitomycin C and 5-FU) may have exerted a beneficial effect.⁽¹⁷⁾ As our 4 cases illustrate the prevailing general belief that the dermoid cyst is a perfectly benign tumor and the inaccessibility of concealed malignant changes in the tumor at operation are the main causes of incomplete operation which are also accountable for the poor prognosis of the tumor.

In view of the absolute poor outcome of the malignant dermoid cyst and teratoma in the literature and in our series, the following surgical principles may be proposed; although radical pelvic surgery was advised by Te Lind because of the tendency to bilaterality of the dermoid cyst.

1) In any event, at operation for dermoid cyst exploration of the opposite ovary should be done.

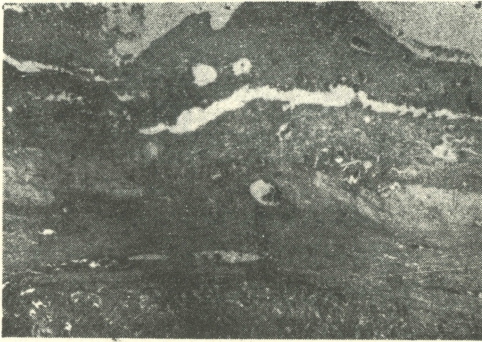
2) In young girls or married young women who still are anxious to have children, conservative surgery may be accepted. In women of reproductive age who have had children, unilateral dermoid cyst indicates salpingoophorectomy while bilateral dermoid cyst rather indicates radical surgery.

3) In women over 46, radical surgery is advisable, whether dermoid cyst is unilateral or bilateral.

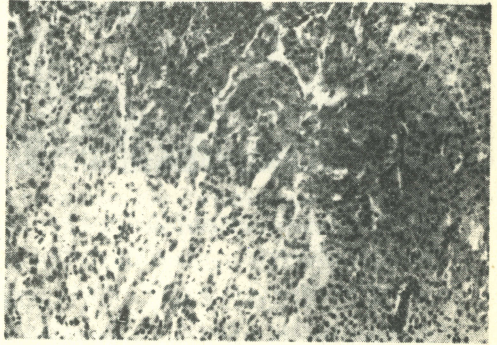
4) In cases where malignancy was confirmed pathologically after conservative surgery or salpingoophrectomy, radical surgery followed by chemotherapy and irradiation is advisable.

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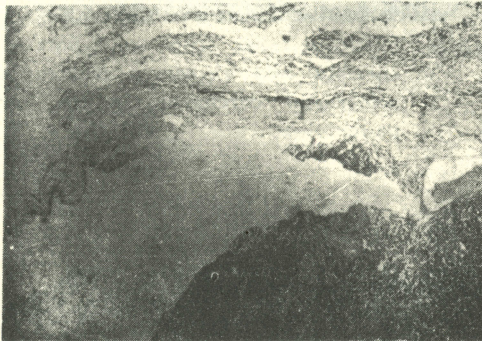
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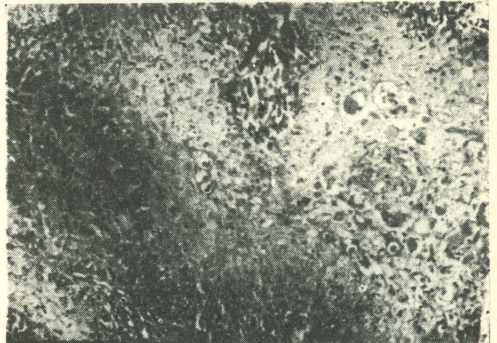
Case 1. P. C. Wu (TPMC69-245) Low power view of the dermoid cyst, skin elements and its appendage. Epidermoid carcinoma is seen in the low portion.



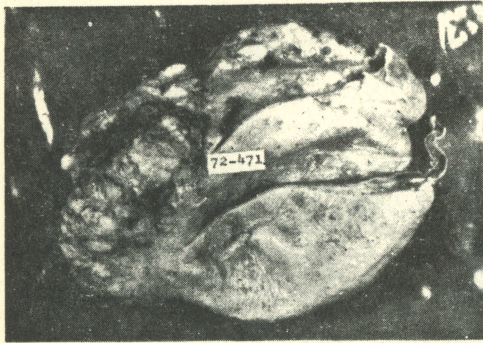
Case 1. P. C. Wu (TPMC69-245) Epidermoid carcinoma in the dermoid cystic wall.



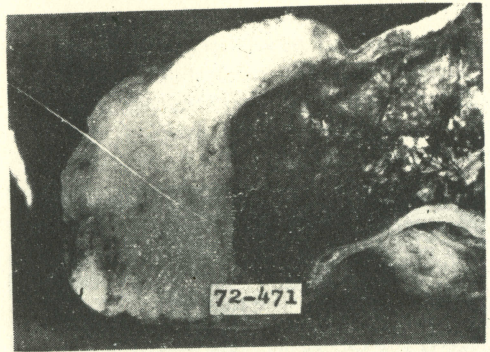
Case 2. M. A. C. Huang (TPMC71-962) Low power view of dermoid cystic wall. Epidermoid carcinoma is seen in the rt. low part.



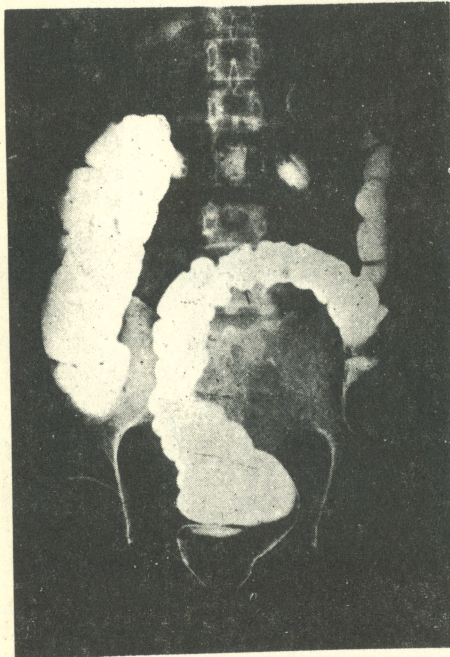
Case 2. M. A. C. Huang (TPMC71-962) High power view of epidermoid carcinoma with a little tendency to keratinization.



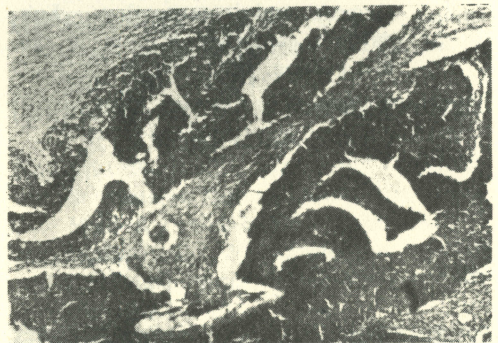
Case 3. Gross appearance of malignant degeneration of dermoid cyst.



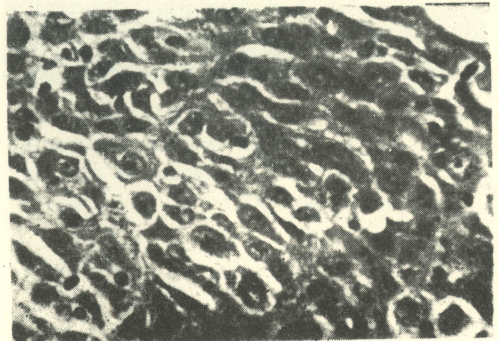
Case 3. Cut surface of malignant degeneration of dermoid cyst.



Case 3. Low G.I. The colon was displaced and put upward.



Case 3. Specimen taken from solid part of dermoid cyst reveals a picture of epidermoid carcinoma in the low power view.



Case 3. High power view of epidermoid carcinoma.

卵巢皮樣囊腫與其惡性變化

臺北市立中興醫院婦產科

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陳定堯

卵巢皮樣囊腫在卵巢腫瘤中約佔5至25%，著者們在1963年1月至1972年12月10年間由臺北市立中興醫院婦產科總共收集了62病例的卵巢皮樣囊腫而加以分析。其中有4病例有惡性變化其發生率為6.45%此4病例都發生在左側。卵巢皮樣囊腫以發生位置分右側有27病例佔43.54%。左側有29病例佔46.77%。左右兩側同時發生者有6例佔9.69%。以年齡分布來看多發生在生育年齡。其中35歲以前的佔69%。根據臺北醫學院病理科記錄。卵巢皮樣囊腫

最年青的為8歲年齡最大的為68歲。而惡性變化最年青者為22歲女學生。這些惡性變化的卵巢皮樣癌的予後，不論用何種方法均不良。著者將4例惡性變化，分別以外科手術化學療法，放射線治療及三者合併使用。其中各種合併治療法，效果似最好。此病人迄今已活過4年了。因皮樣囊腫為良性腫瘍的先入觀念滲透臨床家的頭腦很深，一方面囊腫內惡性變化開刀時也無法發現。手術均為不完全手術（不是根治手術）因此術後病理檢查之重要由此可觀。