PRACTICAL OBSTETRICS

A short textbook

in English and Chinese

FOR STUDENTS AND MIDWIVES

Daphne W. C. Chun and K. H. Lee

中英对照

实用产科学

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PREFACE TO THE FIRST EDITION

The need for an up-to-date textbook on obstetrics for local use has long been felt. In Hong Kong, more than 100 medical students and 300 midwives are trained annually. There are at present well over 1,000 registered doctors and 3,000 midwives. Approximately two-thirds of the midwives and a few graduates from China who do not have a working knowledge of English, have been trained through the medium of the Chinese language but a suitable Chinese textbook is difficult to find. The remainder who have received their education in English have used textbooks written in that language which though good for basic training, do not meet our particular local conditions.

Therefore, in response to repeated requests, the staff of the Department of Obstetrics and Gynaecology of the University of Hong Kong have undertaken to write a suitable reference book on practical obstetrics. This book is written in simple English and illustrated with diagrams and tables. The Chinese translation has been prepared by Dr. H. P. Lau with the assistance of Dr. K. H. Lee and Dr. S. Y. Cheng.

It may not be inappropriate to include a brief history of the Tsan Yuk Maternity Hospital here as constant reference is made by the authors to its statistics. The Hospital first came into existence in 1922 with only 30 beds. The years that followed saw a steady increase in this number until a maximum of 85 was reached in 1950. The number of patients also increased from a few hundred to several thousand annually. By 1951, more than 7,000 were admitted. In 1955, the hospital was rebuilt to accommodate 200 beds. However, this still proved quite inadequate to meet the demand for admissions and in 1957, an unprecedented figure of 11,000 was recorded. To cope with this problem, admission was restricted to high-risk patients only and in consequence the annual number was reduced to about 6,000. Preference is given to patients with medical or obstetrical complications, grand multiparae and primigravidae.

The Tsan Yuk Hospital is at present the only centre in the Colony which provides facilities for training medical students of the University of Hong Kong in the obstetrics course.

Many people have assisted in the writing of this book but Dr. K. H. Lee has contributed most of its chapters. He has also read the proofs.

We are greatly indebted to Professor C. Elaine Field for her valuable suggestions in the section on the newborn baby. We also wish to thank Mr. Thomas Chan and Miss Patsy Choy who typed the manuscript and prepared the illustrations.

Criticisms and suggestions for incorporation in later editions will be gratefully welcomed by the editors.

DAPHNE W. C. CHUN

初版前言

我們久已感覺香港需要出版一本適合本地用之現代產科書。在香港每年超過一百名醫科學生及三百名接產士接受訓練。現在註冊醫師人數超過一千名，註冊接產士人數超過三千名。約三份二之接產士及少數中國內地醫科畢業生對實用英語認識不足，受訓時用中文講授，但一本適當之中文教科書甚難尋求。餘者曾受英語教育可用英文教科書，此等書籍雖可供給基本學識，但不能適應本地之特別情況。

爲響應各界屢次要求，香港大學產婦科醫師乃着手著作一本適用之實用產科參考書。現在該書已用簡單英語寫成，附有圖表加以說明。並在李健鴻醫師及鄭兆如醫師協助下，由劉鴻翩醫師負責譯成中文。

因書內常提及贊育醫院之統計數字，所以應在此簡述該院之歷史。贊育醫院在1922年落成，當時病牀祇有三十張，隨後牀數逐漸增加，至1950年，有病牀八十五張。產婦數目亦劇增，由每年數百增至每年數千。在1951年，超過七千名產婦入院分娩。1955年贊育醫院重建，可容納二百病牀，但仍不足應付產婦之需求，而在1957年，多至一萬一千名產婦入院。爲解決此困難，醫院限制祇收危險性高之產婦，由此產婦數目減至每年六千。凡產婦患有內科或產科併發症者，妊娠次數過多者及初胎產婦，可獲優先收容。

贊育醫院乃現在香港唯一可供香港大學醫學生作產科訓練之地方。

此書由多人合寫而成，但李健鴻醫師負責撰寫其中之大部份，並擔任編訂及校對工作。

我們感謝非爾特教授對新生兒一節提供寶貴意見，並感謝陳庭育先生與蔡雪君女士爲我們打英文稿及繪畫說明圖表。

編者對各方面之批評及再版時之建議將表感激及歡迎。

秦惠珍

PREFACE TO THE SECOND EDITION

The first edition, the first medical textbook published in both English and Chinese, was well received by obstetricians, medical students, staff, and student midwives alike. In this second edition we have taken account of various advances in the field of obstetrics.

Two new chapters have been added. One is on ultrasonic technique, which is frequently employed for diagnostic purposes. The other is on family planning and is included to give medical students and midwives a good knowledge of birth control.

Revisions have been made in most of the chapters to bring them up-to-date. The entire work of revising has been undertaken by both of us. The Chinese translation has been prepared by Dr. H. P. Lau in conjunction with Dr. K. H. Lee. The chapter "Detection of Foetal Hypoxia" has been completely rewritten to include current methods for the assessment of foetal well-being and foetal monitoring during labour. The text truly reflects the efficiency and the high standard of equipment in the Tsan Yuk Hospital labour ward.

DAPHNE W. C. CHUN
K. H. LEE

HONG KONG
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再版前言

本書初版乃醫科教科書中第一本有中英對照者，發行以來，甚受產科醫生，醫科學生，助產士及受訓助產士之一致歡迎。所以此次再版仍保持中英對照之特色。

新加之兩章，其中一章敍述超音波技術。超音波現已常在產科診斷上採用。另一章敍述家庭計劃，使醫科學生及助產士獲取充份關於避孕之知識。

此外，每章皆經修訂以趕上時代。修訂再版之工作全部由我等二人負責。中文翻譯則由劉鴻翩醫生及李健鴻醫生擔任。“胎兒缺氧之診斷”一章，則全部重寫，並包括診斷胎兒情況及分娩期胎兒嚴密觀察之最新方法。書中所述足以顯示贊育醫院產房之設備完善及工作效率良好。

秦惠珍
李健鴻

香港
一九七三年五月

CONTENTS

Part I—Anatomy and Physiology

Part II—Normal Pregnancy

Part III—Abnormal Pregnancy

Part IV—Normal Labour

目　錄

第一篇　解剖與生理

第二篇　正常妊娠

第三篇　異常妊娠

第四篇　正常分娩

Part V—Abnormal Labour

Part VI—The Puerperium

Part VII—The Newborn Baby

Part VIII—Miscellaneous

第五篇　異常分娩

第六篇　產褥期

第七篇　新生嬰兒

第八篇　其他

CHAPTER 1

ANATOMY OF THE BONY PELVIS

The bony pelvis is made up of four bones: two innominate bones at the sides and in front, the sacrum and coccyx behind (1/Fig. 1).

Each innominate bone is composed of three bones completely fused together, the ilium, the ischium and the pubic bone. The ilium forms nearly all the bony portion of the false pelvis and joins the sacrum to form the sacro-iliac joint. The ischium is fused at its upper end with the ilium and pubis to form slightly more than two-fifths of the acetabulum. In the upright position, the body rests on the lower end of the ischium. The ischial tuberosity is the rough lower end on the dorsal surface. The two pubic bones meet in front to form the symphysis pubis.

The sacrum is made up of five fused vertebrae. It is roughly triangular in shape with its base pointing upward and joining the last lumbar vertebra to form the lumbo-sacral joint. Its upper anterior portion projects inwards to form the sacral promontory. Its lower and narrow end is joined to the coccyx forming the sacro-coccygeal joint. On either side it joins the ilium to form the right and left sacro-iliac joints.

The coccyx is made up of five small pieces of cartilaginous bones fused together. It can be disregarded in labour as a part of the bony pelvis because the sacro-coccygeal joint is flexible and can be pushed backwards by the advancing foetal head during labour. In extremely rare cases, the sacro-coccygeal joint may be ankylosed resulting from a fracture or disease which may give rise to contraction of the outlet of the pelvis.

The entire pelvis is made up of two parts:—

1. **The false pelvis** is the portion which lies above the ilio-pectineal line. This part of the pelvis plays no part in parturition.

2. **The true pelvis** is the portion which lies below the false pelvis and is concerned with parturition. Hence its shape, size and general structure are important in obstetrics. The true pelvis is divisible into three parts (1/Fig. 2):—

i) **The brim** or inlet is the ilio-pectineal line which divides the pelvis into false and true pelves. It is oval-shaped and bounded behind by the sacral promontory and the ala of the sacrum, on either side by the sacro-iliac joint, the ilio-pectineal line with its ilio-pectineal eminence (the slightly raised portion of fusion of the ilium with the pubic bone) and the upper border of the superior ramus of the pubic bone, and in front by the superior border of the symphysis pubis.

ii) **The mid-cavity** is the curved canal lying between the inlet and outlet. It is bounded behind by the sacrum, on either side by the sacro-spinous and sacro-tuberous ligaments (which run respectively from the sacrum to the ischial spine and ischial tuberosity), the ischium and in front by the posterior surface of the symphysis pubis. This part of the pelvis is somewhat circular in shape and looks like a cylinder, curving downwards and backwards at first and then downwards and forwards with a long posterior wall formed by the whole length of the sacrum of about 10 cm. and a short anterior wall formed by the symphysis pubis of about 4.5 cm.

第　一　章

骨盆之解剖

骨盆乃由四塊骨骼構成：前面與兩旁爲二髖骨，後爲骶骨與尾骨（圖一）。

每一髖骨係由三塊骨骼聯合組成，即髂骨，坐骨與恥骨。左右二恥骨在前連合成爲恥骨聯合。骶骨之側與兩旁之髂骨相連，其結合處爲骶髂關節。骶骨之上面與腰椎骨之末塊相連成一角度，使骶骨之上端突入成爲骶骨岬。其下面與尾骨相連，其結合處爲骶尾關節。尾骨乃由五塊小軟骨構成。由於骶尾關節爲一可能移動的關節，分娩時下降之兒頭能迫使尾骨向後。故以分娩而言，尾骨可以不列爲骨盆之一部份。但間或有極少數之婦人由於折骨或患病以致骶尾關節硬化，則骨盆出口可能狹窄而引致對分娩有不利之影響。

骨盤可分爲二部

1．**假骨盆**：位於髂恥綫之上。該綫乃由骶骨岬之尖，至恥骨聯合上緣之中點。此部份之骨盆與分娩無關。

2．**眞骨盆**：位於假骨盆之下，對於分娩有極大關係。因此其形狀、大小、與構造對於產科學極爲重要。

眞盤骨可再分爲三部（圖二）

1．**骨盆上口或入口**：即是眞骨盆與假骨盆之分界綫。此入口呈橢圓形，後面以骶骨岬與骶骨翼爲界。兩旁順次爲骶髂關節，髂恥綫與其髂恥隆凸，（此髂恥隆凸乃髂骨與恥骨相連接處輕微突出之部份），及恥骨上枝之上緣。前面則以恥骨聯合之上緣爲界。

2．**骨盆腔**：此是一彎曲管道，位於骨盆入口與出口之間。後面以骶骨爲界；兩旁爲骶棘靭帶，骶結節靭帶（此二靭帶是由骶骨，至坐骨棘，與坐骨結節），及坐骨；前以恥骨聯合之後面爲界。骨盆腔之形狀乃一圓管，起始時彎向下及向後，然後向下及向前，形成一長後壁及一短前壁。後壁乃由骶骨構成，長約 10 厘米。前壁則由恥骨聯合構成，長約 4.5 厘米。

iii) **The outlet** is divisible into anatomical and obstetric outlet. The anatomical outlet is diamond-shaped. It is bounded behind by the tip of the coccyx, on either side by the ischial spine, the inner surface of the ischial tuberosity and in front by the inferior pubic ramus and the lower border of the symphysis pubis. The boundaries of the obstetric outlet are the same except for the posterior part which is the lower border of sacrum. The coccyx can be swung backwards during labour hence obstetric outlet is the one used in parturition.

Types of Female Pelvis

The pelvis may be classified into four different parent types according to the shape of the brim (1/Fig. 3):—

i) **Gynaecoid**—in which the brim is more or less round. This is the normal female pelvis and is most suitable for childbirth.

ii) **Anthropoid**—in which the antero-posterior diameter of the brim is greater than the transverse diameter and resembles the pelvis of the anthropoid ape.

iii) **Platypelloid**—in which the transverse diameter is wider than the antero-posterior by at least 3 cm.

iv) **Android**—in which the brim is wedge-shaped and the pelvis morphologically resembles that of the male. This type of pelvis is most unsuitable for childbirth.

All these parent types can be large, average or small as regards their size. Besides, mixed forms combining features of more than one parent type are not uncommon.

The following table shows the relative frequency of each type in a series of 1,005 Chinese female pelves examined by the Departments of Radiology and Obstetrics at the Tsan Yuk Hospital:—

Table I—Chinese Female Pelves

Type of Pelvis			*Total*	*Percentage*
Gynaecoid	Pure	732	808	80.4
	Mixed	76		
Anthropoid	Pure	108	137	13.6
	Mixed	29		
Platypelloid	Pure	31	54	5.6
	Mixed	23		
Android	Pure	2	6	0.6
	Mixed	4		
			1,005	100.00

3．**骨盆出口**：此出口分爲二部：解剖學的出口，與產科學的出口。解剖學的出口包括尾骨在內，而與產科無關。由於兒頭不經解剖學之出口而祇經產科學之出口，本章祇述及產科學之出口而已。

產科學出口爲菱形。其界限後爲骶骨之下緣，兩旁爲坐骨棘與坐骨結節之內面，前爲恥骨下枝與恥骨聯合之下緣。

女性骨盤之分類

骨盆可分爲四大類（圖三）。

1．**女性型骨盆**：盆口似圓形，此乃女性正常之骨盆，最適宜分娩。

2．**類人猿型骨盆**：骨盆之前後徑較橫徑長，類似人猿之骨盆。

3．**扁型骨盆**：骨盆之橫徑較前後徑長，而其長度相差超過3厘米者。

4．**男性型骨盆**：盆口楔形，類似男性骨盆。此類骨盆最不適宜分娩。

以上各形骨盆大小不等，更有混合型，即多過一類混合而成，此種骨盆亦甚爲普遍。

下列表一是在贊育醫院中，將1,005名中國女性骨盆由放射學系與產科學系檢驗研究所得之結果。其中各分類相比數字如下。

表一　中國女性骨盆

骨盆之分類		總數	百份率
女性型骨盆	單純的：732 混合的：76	808	80.4
類人猿型骨盆	單純的：108 混合的：29	137	13.6
扁型骨盆	單純的：31 混合的：23	54	5.6
男性型骨盆	單純的：2 混合的：4	6	0.6
		1,005	100

The following series, reported by Caldwell and Molloy, is shown for comparison:—

Table II—American Female Pelves

Type of Pelvis	*Female White*	*Female Negro*
Gynaecoid	41.4%	42.1%
Android	32.5%	15.7%
Anthropoid	23.5%	40.4%
Platypelloid	2.6%	1.7%

It is seen in Table II that the frequency of gynaecoid pelves does not differ much between the white and negro females but there is more variation in other types. When the Chinese pelves (Table I) are compared with those of the American (Table II) there are almost twice as many gynaecoid type in the Chinese. Moreover, the android type is very rare. The Chinese pelves are, therefore, more suitable for childbirth.

Size of the Pelvis

The external measurements of the interspinous and intercristal diameters and the external conjugate are now considered obsolete as they do not indicate accurate measurements of the true pelvis. The size should, therefore, be determined by radiological pelvimetry. It is not necessary to take radiographs of the pelvis of every pregnant woman because the foetal head is the best pelvimeter. When it can be made to enter the pelvis at or near term, the pelvis is clinically adequate. Outlet contraction is extremely rare. At the Tsan Yuk Hospital where only the more difficult cases are admitted, barely 20% of the patients require X-ray pelvimetry. This is done for cases of suspected pelvic contraction, cephalo-pelvic disproportion, persistent abnormal presentation or previous Caesarean section. It is preferable to have it done when the foetus is about 38 weeks mature in order to minimize radiation risk to the developing foetus.

In order to determine accurately the space available for the foetal head and to ascertain the relationship of the latter with the pelvis, X-ray measurements are taken at three levels, the brim or inlet, the mid-pelvis and the outlet. The diameters commonly employed are represented diagramatically in 1/Fig. 4 and radiologically in 1/Fig. 5 and 6:—

1. At the brim or inlet:

a) The antero-posterior or sagittal diameters occupy the sagittal plane of the pelvis. They are located in the midline of the body which serves as a surgical landmark:—

(i) **Anatomical conjugate** (A.C.) is the distance from the superior border of the pubic symphysis to the sacral promontory.

(ii) **Obstetric conjugate** (O.C.) is the shortest distance between the convex surface of the inner aspect of the pubic symphysis and the sacral promontory or the near-by more prominent bony projection, if any.

The obstetric conjugate represents accurately the available space and should be employed in measuring the pelvis. Due to the convexity of the inner aspect of the pubic symphysis, the space represented by the anatomical conjugate may be reduced by as much as 1 cm. or more.