

# The use of external pelvimetry in 1948

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A sequel to our previous article which discusses senior midwife Mrs Kai-ying Poon Yam's casebook detailing the 30 births she attended while on placement at Tsan Yuk Hospital between 1947 and 1948,<sup>1</sup> this article focuses on the Collin's pelvimeter generously donated to the Hong Kong Museum of Medical Sciences by Dr Chiu-kwong Yu's family (Fig 1).

When a lady presented to the labour ward in 1948, key information—including her name, the date of her last menstrual period and her estimated due date—was recorded. In addition to the woman's vitals, routine assessment on admission involved measuring the pelvis and the fundal height as well as assessing the fetal presentation. Measuring the pelvis, ie, pelvimetry, was developed by French obstetrician Dr Jean-Louis Baudelocque in the late 1700s and requires an instrument called a pelvimeter, of which there are different types.<sup>2</sup>

How pelvimetry was introduced to Hong Kong in the 1940s is unclear. However, Prof Richard Edwin Tottenham, the first Professor of Obstetrics and Gynaecology at The University of Hong Kong, might have played an important role in establishing its routine practice; prior to his service in Hong Kong, he published an article about his newly created pelvimeter.<sup>3</sup> External pelvimetry is no longer routine in obstetric care here.

The pelvimeter donated by Dr Yu's family is believed to be a Collin's pelvimeter, possibly named after the French manufacturing company Collin of Paris.<sup>4</sup> It is impossible to ascertain if the pelvimeter is based on the original French model. The instrument comprises two stainless steel curved probes hinged together at one end (Fig 1). The pelvic measurement in centimetres is read off a sliding scale attached near the hinged end of the probes.

External pelvimetry in the 1940s was performed by measuring the interspinous diameter, intercrystal diameter, external conjugate, and transverse outlet, as shown in Figure 2.<sup>5</sup> The interspinous diameter measures the distance between the anterior superior iliac spine, with normal values ranging from 23 to 26 cm.<sup>5</sup> The intercrystal diameter is the distance between the iliac crests, with normal values ranging from 25 to 28 cm.<sup>5</sup> The external conjugate is the

distance between the pubic symphysis and the spinous process of the fifth lumbar vertebrae and should range from 18 to 20 cm.<sup>5</sup> Lastly, the transverse outlet measures the distance between the ischial tuberosities when the woman is supine, and normal values range from 8.5 to 9.5 cm.<sup>5</sup> Of note, whether these normal value ranges truly reflect the standards used in the 1940s is unconfirmed, given the lack of relevant references from the time.

Of those 30 cases recorded in Mrs Poon's casebook, that of a 23-year-old multiparous lady with a contracted pelvis exemplifies the importance of external pelvimetry. The expectant mother had left hip deformity secondary to tuberculosis and a history of stillbirth requiring forceps delivery. She presented at the hospital at 41 weeks and 3 days gestation. She was found to have a floating fetal presentation. All four pelvimetric measurements were shorter than the lowest normal value. She eventually underwent a lower segment caesarean section, performed by Prof Gordon King and Dr B Moore. The operation was successful and the woman delivered a healthy baby.

Over the past 80 years, obstetric practice has witnessed many breakthroughs and improvements in safety and the standard of care. One major change was the introduction of evidence-based practices. In 2018, the World Health Organization issued



FIG 1. The Collin's pelvimeter. Donated by Dr Chiu-kwong Yu's family to the Hong Kong Museum of Medical Sciences

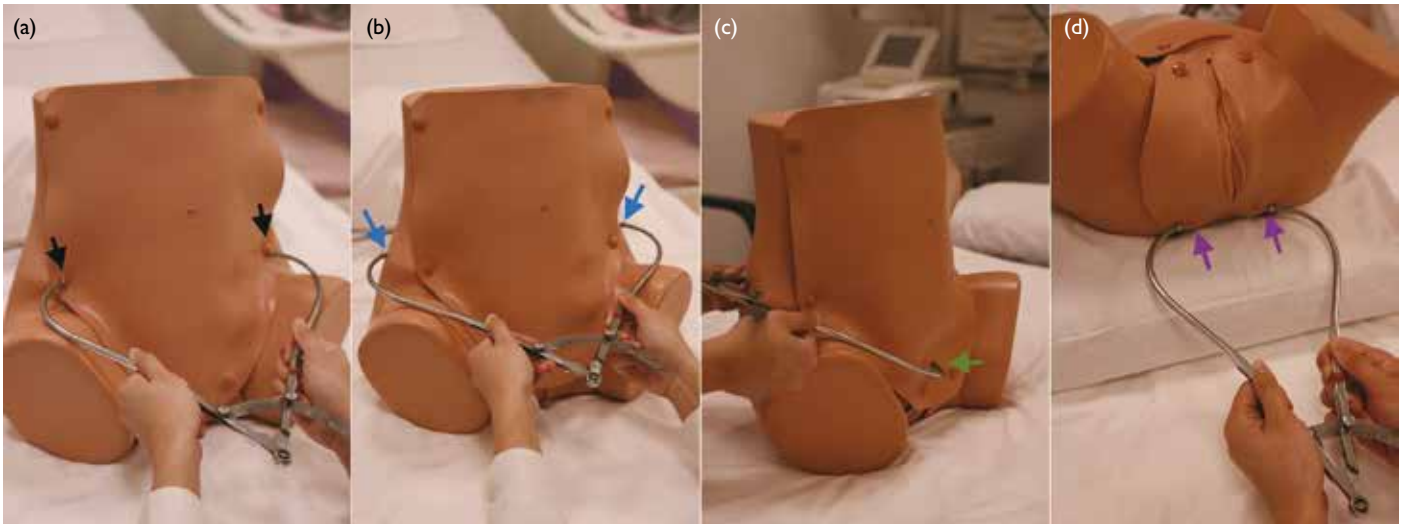


FIG 2. How the four pelvic measurements are taken using the Collin's pelvimeter, demonstrated on a mannequin. (a) Measurement of the interspinous diameter. The anterior superior iliac spines are marked by the black arrows. (b) Measurement of the intercristal diameter. The iliac crests are marked by the blue arrows. (c) Measurement of the external conjugate. The green arrow points at the pubic symphysis. (d) Measurement of the transverse outlet. The purple arrows point at the ischial tuberosities. Photos taken by Dr Stephanie Adams and Dr Tin-long Nip

technical guidelines for intrapartum care to promote a positive childbirth experience.<sup>6</sup> Routine clinical pelvimetry was no longer recommended for healthy pregnant women due to insufficient supporting evidence.<sup>6</sup> Indeed, Prof Daphne Chun and Prof Kin-hung Lee had recognised pelvimetry's lack of clinical significance a few decades before the World Health Organization released their guidelines. As written in their textbook *Practical Obstetrics*, Hong Kong's first bilingual obstetrics textbook, 'External pelvic measurements bear no constant relationship to the actual pelvic measurements, hence external

pelvimetry has now been abandoned...The best pelvimeter is the fetal head.'<sup>7</sup>

Grossly contracted pelvis was more common in the 1940s than in modern times, because of the higher prevalence of malnutrition and tuberculosis. External pelvimetry helped screen for grossly contracted pelvis, reducing the risk of obstructed labour. Thus, the Collin's pelvimeter improved childbirth safety in the forties. This potentially life-saving instrument and Mrs Poon's casebook are great testimonies to the development of obstetric practice in Hong Kong.

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