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This is not a routine investigation and we need to think carefully about the justification for it.

In some eating disorder centres, ultrasonography is carried out routinely on all patients (Kings College Hospital and St Georges in London which are the 2 biggest eating disorder services). That of course does not make it appropriate as a routine investigation, I think in both these services it was started as part of a research project and has been continued.

There isn’t much research to guide us Key et’al 2002, studied a cohort of 64 adolescent girls with Anorexia Nervosa using serial trans abdominal pelvic ultrasound, as they regained weight. The main finding was that 88% of the sample required a weight height ratio of 100% (BMI=20) to be classed as reproductively mature on ultrasound, nevertheless 12% achieved this with a significantly lower BMI. They concluded that it was important to set a reasonable target weight BMI of 20 if patients wanted reproductive maturity and that patients should be informed about this.

Androff et al 1997 found that very low BMI’s in Anorexic patients were associated with undetectable ovaries or ovaries without follicles, but that in patients with moderately low BMI’s mult follicular ovaries with the presence of a dominant follicle and ovarian volume had no clear relationship to BMI. Endometrial thickness did correlate with BMI. They concluded that ovarian morphology was more important than ovarian size and that changes in ovarian morphology appeared more related to eating patterns than to BMI except in those that were very underweight.

Treasure et.al 1988, studied a Cohort of 24 severely malnourished AN patients during weight gain. Weight gain led to the appearance of multifollicular ovaries. As weight increased, in 19 patients (up to 97% of pre-morbid weight), a dominant follicle developed and then in 11 of 19, menstruation began within a month. The weight at which normal ovarian morphology returned was highly related to pre morbid weight and poorly related to current BMI.

Perhaps the most helpful study is that from Allan et al (2010). They performed Trans abdominal ultrasound scans (using either 2-4 MHz or 5-9MHz curvilinear array probe) when patients had reached 85% and then 95% of their expected weights. They found that expected weight was a poor predictor of return of fertility and that 20% of women would not menstruate if target weight was 90% of expected weight for height.

Again they recommended scanning at the start of treatment which doesn’t seem to follow from their findings. They found polycystic ovaries in 10% of patients.

These studies lead to somewhat confusing conclusions as to whether current BMI is an important predictor of reproductive maturity.

From a clinical point of view, there are a number of issues:-

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1. I have had 2 patients who have become pregnant with BMI’s of 16 or below whilst having prolonged amenorrhea and not taking any contraceptive precautions.

2. We have a small group of patients who reach a BMI of 20 and who don’t menstruate. I have seen a couple of patients who have appeared to have developed multi-follicular ovaries without the presence of a dominant follicle, despite BMI’s of 20+ and have not begun menstruation without intervention.

3. We have patients who get to a BMI of 17.5 or 18 and who find it extremely difficult to consider moving to a BMI of 20 but they are concerned about their reproductive status. A scan at this stage would:
   (a) help determine how close they were to reproductive maturity (and some will be at a BMI of 18),
   (b) help motivate them to take that last step if there are significant reproductive immaturity.

4. There is a long debate about the relationship between bulimia nervosa and polycystic ovaries. There is a marked association between the two disorders. Whether it’s cause or effect or a chance finding is not known. We are not planning at this stage to request ultrasound scans in patients with normal weight bulimia nervosa.

We would estimate this would be a relatively small number of requests for ultrasound in the order of 3 -4 per year, though perhaps some would repeat if significant changes occur.

The paper below gives details of how and what to measure.

Pelvic Ultrasonography in Anorexia Nervosa: What the Clinician Should Ask the Radiologist and How to Use the Information Provided

Helen D. Mason, Adrienne Key, Rosemary Allan and Bryan Lask

Pelvic ultrasonography is generally regarded as the gold standard for determination of pelvic maturity and hence the need for further weight gain in patients with anorexia nervosa. Many clinicians, however, have limited knowledge of this technique. Here, we describe the use of pelvic ultrasonography in anorexia nervosa and present an algorithm to assist the clinician, both with what questions to ask from the radiologist, and how to use the information provided to determine the morphology and hence maturity of the pelvic organs. We then show how this information can be used to assign the level of pelvic maturity a grade from 1 to 5. Finally, we demonstrate use of this system in two patients who progressively gained weight until pelvic maturity was achieved.

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References


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