

The Seven Principles of Antenatal Counselling

A Practical and Ethical Framework for Foetal and Neonatal Surgical Conditions

A D Ram

Overview

Antenatal counselling represents one of the most delicate, intellectually demanding, and emotionally significant responsibilities in modern fetal and neonatal medicine.

Few moments in medicine alter a family's psychological landscape more profoundly than the discovery of a fetal anomaly.

What begins as a routine pregnancy scan may suddenly become:

- A confrontation with uncertainty
- A discussion of prognosis
- A conversation about surgery
- A consideration of survival
- An exploration of ethics, disability, and parental values

The role of antenatal counselling is therefore not merely to communicate information.

It is to provide clarity during vulnerability.

This chapter presents a structured framework based upon the “Seven Principles of Antenatal Counselling,” integrating:

- Embryology
 - Fetal medicine
 - Neonatal surgery
 - Imaging
 - Ethics
 - Communication
 - Long-term planning
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Introduction

Antenatal counselling allows clinicians to prepare for the:

- Medical needs
- Surgical needs

- Psychological needs

of the:

- Parents
- Fetus
- Newborn

before, during, and after delivery.

It is one of the cornerstones of:

- Compassionate care
 - Ethical practice
 - Multidisciplinary medicine
 - Shared decision-making
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Why Antenatal Counselling Matters

The discovery of a fetal anomaly frequently generates:

- Fear
- Shock
- Emotional distress
- Confusion
- Grief
- Uncertainty

Good counselling transforms reaction into preparation.

It allows families:

- Time to absorb information
 - Opportunity to ask questions
 - Space to adjust expectations
 - Participation in decision-making
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Ethical Foundations

Antenatal counselling is built upon four fundamental ethical principles:

Beneficence

Acting in the best interests of mother and fetus.

Non-Maleficence

Avoiding harm.

Autonomy

Respecting parental decision-making.

Justice

Ensuring equitable access to care.

Anticipation Rather Than Reaction

One of the greatest strengths of antenatal counselling is anticipation.

It unites:

- Obstetricians
- Fetal medicine specialists
- Neonatologists
- Paediatric surgeons
- Geneticists
- Specialist nurses

around a shared clinical narrative.

This minimises fragmented communication and improves continuity of care.

Pregnancy Scan Schedule

Routine pregnancy imaging generally includes:

Dating Scan

Approximately 12 weeks.

Anomaly Scan

Approximately 20 weeks.

Subsequent scans depend upon identified abnormalities.

The 12-Week Dating Scan

Primary purposes include:

- Confirmation of pregnancy
- Determination of fetal number

- Crown-rump length measurement
 - Estimated due date
 - Down syndrome screening (if agreed)
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The 20-Week Anomaly Scan

The anomaly scan functions as a gateway into fetal medicine.

Its purpose is to identify structural abnormalities that may benefit from:

- Specialist counselling
- Planned delivery
- Neonatal stabilisation
- Surgical referral
- Fetal intervention

Importantly:

It is a screening test, not a definitive diagnosis.

The Seven Principles of Antenatal Counselling

The counselling framework may be summarised as:

I. Diagnosis, Differential Diagnosis and Measurements

II. Causes, Associations and Effects

III. Further Scans and Frequency of scans and frequency of consultations

IV. Antenatal Management (conservative, medical, interventional, surgical)

V. Delivery Planning (Time, place and Mode of delivery)

VI. Postnatal Planning (Immediate, Medical, Surgical)

VII. Closure and Continuing Support

Principle I

Diagnosis, Differential Diagnosis and Measurements

The first responsibility is diagnostic clarity.

This principle contains three components:

A. Confirm Diagnosis

B. Consider Differential Diagnosis

C. Obtain Meaningful Measurements

Establishing the Diagnosis

Examples of common antenatally diagnosed surgical anomalies include:

- Gastroschisis
 - Exomphalos
 - Congenital diaphragmatic hernia (CDH)
 - Congenital pulmonary airway malformation (CPAM)
 - Oesophageal atresia
 - Bowel atresia
 - Sacrococcygeal teratoma
 - Cervical teratoma
 - Lymphatic malformations
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Differential Diagnosis

Many fetal lesions possess overlapping appearances.

Examples include:

Condition	Differential
Gastroschisis	Ruptured exomphalos
CPAM	Congenital diaphragmatic hernia
Ovarian cyst	Duplication cyst
Lymphatic malformation	Vascular malformation

Accurate differentiation profoundly influences management.

The Importance of Measurements

Measurements transform observation into prognostication.

However:

Numbers guide us. Trends and trajectories inform us.

Single measurements are less important than evolving patterns.

CPAM Volume Ratio (CVR)

CVR predicts hydrops risk in CPAM.

$$CVR = \frac{(L \times W \times H \times 0.52)}{HC}$$

Where:

- L = length
 - W = width
 - H = height
 - HC = head circumference
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Interpretation of CVR

A CVR above 1.6 is dangerous.

$$CVR > 1.6 \rightarrow \text{High Risk of Hydrops}$$

A CVR >1.6 with hydrops approaches near-certain fetal demise without intervention.

Exomphalos Measurements

The Exomphalos Diameter-to-Abdominal Circumference ratio predicts closure feasibility.

$$\frac{ED_{max}}{AC}$$

A ratio below approximately 0.24 predicts greater likelihood of primary closure.

Gastroschisis Measurements

Intra-abdominal bowel dilatation >7 mm correlates with:

- Complex gastroschisis
- Atresia
- Ischaemic complications

Extra-abdominal dilatation alone is less significant.

Sacroccygeal Teratoma Measurements

The Tumour Volume-to-Fetal Weight Ratio (TFR) is critical.

$$TFR = \frac{L \times W \times H \times 0.52}{\text{Foetal Weight}}$$

Interpretation of TFR

$$TFR \geq 0.12 \rightarrow \text{High Risk Pregnancy}$$

A rising TFR predicts:

- Cardiac failure
- Hydrops
- Perinatal mortality

Congenital Diaphragmatic Hernia Measurements

Several prognostic indices exist.

Lung-to-Head Ratio (LHR)

$$LHR = \frac{\text{Contralateral Lung Area}}{\text{Head Circumference}}$$

Observed-to-Expected LHR

$$O/E \text{ LHR} = \frac{\text{Measured LHR}}{\text{Expected LHR}} \times 100$$

Quantitative Lung Index (QLI)

$$QLI = \frac{\text{Contralateral Lung Area}}{\text{Estimated Foetal Weight}}$$

Severity Classification in CDH

Severe

- LHR <1
- O/E LHR <25%
- QLI <1

Moderate

Intermediate values.

Mild

- O/E LHR >45%

- QLI >2

Importantly:

Higher values are better in CDH.

Principle II

Causes, Associations and Effects

Once diagnosis is established, the next task is understanding why the anomaly exists and what accompanies it.

Causes

Potential causes may include:

- Smoking
 - Alcohol exposure
 - Marijuana use
 - Maternal infections
 - Genetic abnormalities
 - Environmental teratogens
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Associations

Many fetal anomalies coexist with:

- Chromosomal disorders
- Cardiac anomalies
- Syndromic conditions

This may necessitate:

- Fetal echocardiography
 - Genetic counselling
 - Invasive testing
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CVS versus Amniocentesis

Chorionic Villous Sampling

- 10–12 weeks

- Transcervical or transabdominal
- Earlier diagnosis
- Slightly higher risk

Amniocentesis

- 16–20 weeks
 - Transabdominal
 - Lower procedural risk
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Effects of the Condition

The anomaly may lead to:

- Hydrops
- Polyhydramnios
- Intrauterine growth restriction
- Fetal demise
- Preterm labour

Understanding physiology is critical.

Principle III

Further Scans, Frequency of scans and Frequency of Follow-Up

Counselling is not a single conversation.

It is a process.

Further Imaging

Additional investigations may include:

Fetal MRI

Useful for:

- Diagnostic clarification
- Intrathoracic lesions
- Pelvic extension
- CNS abnormalities

Fetal Echocardiography

Essential for suspected cardiac disease.

Frequency of Surveillance

Most significant anomalies require review every:

2–4 weeks.

Rapidly evolving lesions may require more frequent monitoring.

Principle IV

Antenatal Management (conservative, medical, interventional, surgical)

Management options range from observation to fetal surgery.

Foetal Therapy

Examples include:

- Maternal steroids
 - Laser ablation
 - Radiofrequency ablation
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Foetal Intervention

Examples include:

- Aspiration procedures
 - Shunt insertion
 - FETO (Fetoscopic Endoluminal Tracheal Occlusion)
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Foetal Surgery

Reserved for carefully selected cases.

Examples include:

- Myelomeningocele repair
 - Severe SCT intervention
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Termination of Pregnancy

Termination discussions must be approached with extraordinary sensitivity.

Clinicians must provide:

- Honest information
 - Non-directive counselling
 - Legal clarity
 - Emotional support
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Current UK Legal Framework

The UK law allows termination beyond 24 weeks under specific circumstances involving severe fetal abnormality.

This remains an area of ethical, social, and emotional complexity.

Methods of Termination

Medical Termination

Mifepristone

Blocks progesterone.

Misoprostol

Induces uterine contractions.

Surgical Termination

Suction Aspiration

Usually before 15 weeks.

Dilation and Evacuation (D&E)

Usually after 15 weeks.

Principle V

Delivery Planning (Time, place and Mode of delivery)

Delivery planning involves three questions:

When?

How?

Where?

Timing of Delivery

Balancing:

- Prematurity
- Fetal compromise
- Maternal wellbeing

is critical.

Mode of Delivery

Options include:

- Vaginal delivery
- Elective Caesarean section

depending upon lesion size and physiology.

Place of Delivery

Many fetuses with surgical anomalies should be delivered in tertiary centres with:

- Neonatal intensive care
 - Paediatric surgery
 - Specialist anaesthesia
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Principle VI

Postnatal Planning (Immediate, medical, surgical)

The postnatal plan should be discussed antenatally whenever possible.

Immediate Neonatal Priorities

These may include:

- Airway stabilisation
 - Ventilation
 - Gastric decompression
 - Vascular access
 - Surgical transfer
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Medical and Surgical Planning

Parents should understand:

- Likely operations
 - Expected NICU stay
 - Potential complications
 - Long-term outcomes
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Principle VII

Closure and Continuing Support

Good counselling does not end when the consultation finishes.

Information Provision

Families should receive:

- Written leaflets
 - Reliable websites
 - Support group information
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Dissemination

Clear communication with:

- Midwives
- GPs
- Neonatal teams
- Local hospitals

is essential.

Visitation and Familiarisation

Where appropriate, antenatal visits to:

- NICU
- Surgical wards
- Fetal medicine units

may reduce anxiety and improve preparedness.

Echogenic Bowel: An Example of Structured Counselling

Echogenic bowel illustrates the importance of systematic antenatal counselling.

Definition

Bowel echogenicity equal to or greater than adjacent bone during second trimester ultrasound.

Occurs in approximately 1% of scans.

Clinical Significance

Most isolated cases are benign.

However associations include:

- Aneuploidy
 - Infection
 - Cystic fibrosis
 - Bowel atresia
 - Intrauterine growth restriction
 - Fetal demise
-

Grading of Echogenic Bowel

Grade Appearance

- | | |
|---|--------------------|
| 0 | Less than liver |
| 1 | Greater than liver |
| 2 | Equal to bone |
| 3 | Brighter than bone |

Higher grades carry greater significance.

Work-Up of Echogenic Bowel

Five key components:

1. Detailed ultrasound
2. Amniocentesis

3. CF carrier testing
 4. Maternal infection screening
 5. Serial growth scans
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Twin-to-Twin Transfusion Syndrome (TTTS)

TTTS represents another condition where counselling is essential.

Definition

A progressive disorder affecting monochorionic twins due to abnormal placental vascular connections.

Pathophysiology

One twin transfuses blood to the other through placental anastomoses.

Result:

- Donor hypovolaemia
- Recipient cardiac overload

Without treatment, mortality approaches 80%.

Maternal Mirror Syndrome

Severe fetal hydrops may produce maternal symptoms mirroring fetal oedema:

- Hypertension
 - Oedema
 - Pulmonary oedema
 - Proteinuria
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Foetoscopic Laser Ablation in TTTS

The definitive treatment involves:

- Fetoscopic identification of placental vessels
- Laser ablation of abnormal vascular connections

An elegant example of modern fetal surgery.

Conclusion

Antenatal counselling is among the highest forms of clinical communication.

It requires:

- Scientific precision
- Emotional intelligence
- Ethical sensitivity
- Long-term vision

The seven principles provide a structured framework that transforms overwhelming information into meaningful preparation.

Ultimately, excellent antenatal counselling does not remove uncertainty.

But it allows families to face uncertainty with knowledge, support, dignity, and hope

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