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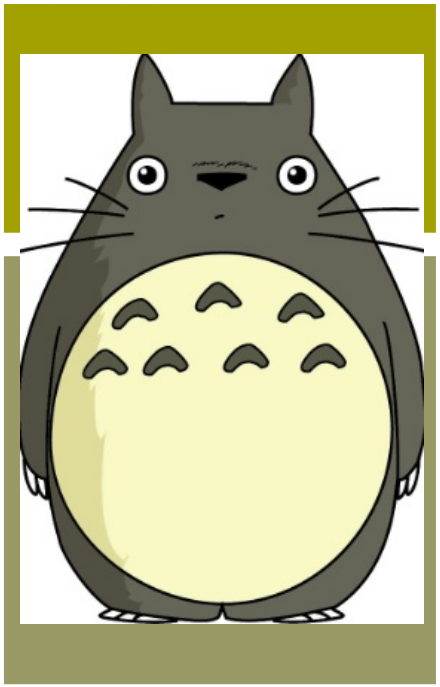


Gravida obesa: quali rischi materni e fetali ?

1/04/2016

Dott.ssa Roberta Capucci
Clinica Ostetrico-Ginecologica
Direttore Prof. P. Greco

COUNSELLING PRECONCEZIONALE

- Momento ideale per istruire la paziente su:
  - Attuale stato di salute
  - Rischi per la fertilità
  - Rischi per la gravidanza
  - Pianificare la perdita di peso
  - Un’adeguata alimentazione e attività fisica
  - Supplemento con ac folico

- Screenig per patologie correlate

Overcash RT1, Lacoursiere DY. The clinical approach to obesity in pregnancy. Clin Obstet Gynecol. 2014 Sep;57(3):485-500.

COUNSELLING PRECONCEZIONALE

- Indirizzare alla chirurgia bariatica (obesità di II e III classe)

- Posticipare la gravidanza se chirurgia bariatica recente:
  - Rischio di malnutrizione e defict alimentari
  - Feti SGA

Overcash RT1, Lacoursiere DY. The clinical approach to obesity in pregnancy. Clin Obstet Gynecol. 2014 Sep;57(3):485-500.

Centre for Maternal and Child Enquiries
Improving the health of mothers, babies and children

Royal College of Obstetricians and Gynaecologists

Setting standards to improve women's health

CMACE/RCOG Joint Guideline

Management of Women with Obesity in Pregnancy

March 2010

APPENDIX 3: Maternal and fetal risks in women with a BMI ≥30 kg/m^2 compared to women with a healthy BMI

Risk	Study	Pop.	Odds ratio [95% Confidence interval]*
Gestational diabetes	NW Thames 1989 – 97 [1]	287213	3.6 [3.3-4.0] [a]
	Aberdeen 1976 – 2005 [2]	24241	2.4 [2.2-2.7]
Hypertensive disorders	NW Thames 1989 – 97 [1]	287213	2.1[1.9-2.5] [a]
	Aberdeen 1976 – 2005 [2]	24241	3.3 [2.7-3.9]
Venous thromboembolism	Denmark 1980 – 2001 [3]	71729	9.7 [3.1-30.8]
Slower labour progress 4 – 10cm	USA 1995 – 2002 [4]	612	7 versus 5.4 hrs p<0.001
Caesarean	Meta-analysis of 33 studies		2.1 [1.9-2.3]
Emergency caesarean	NW Thames 1989 – 97 [1]	287213	1.8 [1.7-1.9]
	Cardiff 1990 – 99 [5]	8350	2.0 [1.2-3.5]
Postpartum haemorrhage	NW Thames 1989 – 97 [1]	287213	1.4 [1.2-1.6] [a]
	Aberdeen 1976 – 2005 [2]	24241	2.3 [2.1-2.6]
Wound infection	NW Thames 1989 – 97 [1]	287213	2.24 [1.91-2.64] [a]
Birth defects	Australia [6]	11252	1.6 [1.0-2.5]
Prematurity	Aberdeen 1976 – 2005 [2]	24241	1.2 [1.1-1.4]
	Australia 1998 – 2002 [6]	11252	1.2 [0.8-1.7]
Macrosomia	NW Thames 1989 – 97 [1]	287213	2.4 [2.2-2.5] [a]
	Sweden 1992 – 2001 [7]	805275	3.1 [3.0-3.3] [b]
Shoulder dystocia	Sweden 1992-2001 [7]	805275	3.14 [1.86-5.31] [b]
	Cardiff 1990 – 99 [5]	8350	2.9 [1.4-5.8]
Admission to NNU	NW Thames 1989 – 97 [1]	287213	1.3 [1.3-1.4] [a]
	Cardiff 1990 – 99 [5]	8350	1.5 [1.1-2.3]
Stillbirth	Meta-analysis of 9 studies [8]		2.1 [1.5-2.7]
Neonatal death	Denmark 1989 – 96 [9]	24505	2.6 [1.2-5.8]

[a] 99% Confidence intervals
[b] OR for morbidly obese
* Unless otherwise stated

	Underweight		Normal weight		Overweight		Obese I		Obese II		Obese III	
	%	RR (95% CI)	%	RR (95% CI)	%	RR (95% CI)	%	RR (95% CI)	%	RR (95% CI)	%	RR (95% CI)
Maternal												
Gestational diabetes mellitus	1.6	**1.12** (0.81;1.56)	1.9	**1.00** (ref)	4.2	**2.36** (2.04;2.61)	8.4	**4.82** (4.23;5.49)	12.2	**7.17** (6.20;8.30)	15.0	**8.96** (7.65;10.49)
Hypertensive disorders of pregnancy	1.0	**0.92** (0.62;1.37)	1.2	**1.00** (ref)	1.7	**1.60** (1.35;1.89)	2.3	**2.20** (1.81;2.66)	2.3	**2.22** (1.73;2.86)	4.0	**3.90** (3.04;5.00)
Induction	22.8	**0.95** (0.88;1.03)	24.7	**1.00** (ref)	29.6	**1.24** (1.20;1.28)	34.0	**1.44** (1.38;1.49)	37.5	**1.61** (1.53;1.69)	39.9	**1.69** (1.60;1.79)
Caesarean section	16.0	**0.80** (0.73;0.89)	21.8	**1.00** (ref)	28.0	**1.29** (1.24;1.34)	32.8	**1.51** (1.44;1.58)	36.9	**1.69** (1.60;1.79)	45.1	**2.05** (1.94;2.19)
Neonatal												
Large for gestational age	5.8	**0.58** (0.49;0.68)	10.9	**1.00** (ref)	16.0	**1.45** (1.38;1.53)	19.6	**1.78** (1.68;1.90)	21.4	**1.91** (1.76;2.07)	24.8	**2.29** (2.10;2.49)
Small for gestational age	15.1	**1.70** (1.52;1.89)	8.1	**1.00** (ref)	6.3	**0.81** (0.75;0.88)	6.1	**0.77** (0.69;0.85)	5.3	**0.69** (0.59;0.80)	5.3	**0.66** (0.55;0.80)
5 min Apgar ≤ 7	3.2	**1.22** (0.96;1.54)	2.8	**1.00** (ref)	3.0	**1.11** (0.98;1.26)	3.4	**1.28** (1.10;1.49)	3.2	**1.20** (0.97;1.48)	4.6	**1.86** (1.50;2.31)
Neonatal intensive care unit admission	11.9	**1.28** (1.11;1.47)	9.7	**1.00** (ref)	10.5	**1.10** (1.02;1.18)	11.1	**1.20** (1.09;1.32)	12.7	**1.40** (1.24;1.57)	13.6	**1.53** (1.32;1.77)
Cord pH ≤ 7.10	1.9	**1.04** (0.75;1.44)	1.9	**1.00** (ref)	2.3	**1.20** (1.03;1.40)	2.7	**1.45** (1.20;1.74)	2.5	**1.32** (1.02;1.72)	3.3	**1.92** (1.47;2.51)
Respiratory distress syndrome	4.4	**1.16** (0.95;1.42)	3.9	**1.00** (ref)	4.5	**1.16** (1.04;1.28)	5.0	**1.33** (1.17;1.52)	5.1	**1.36** (1.14;1.61)	6.0	**1.70** (1.40;2.06)
Fetal/neonatal death	0.4	**1.45** (0.80;2.63)	0.3	**1.00** (ref)	0.3	**0.98** (0.68;1.41)	0.4	**1.19** (0.78;1.81)	0.4	**1.46** (0.86; 2.49)	0.5	**1.16** (0.56;2.40)

Table 2. Prevalence of adverse maternal and neonatal outcomes by pre-pregnancy weight status, and relative risks (RR)* with 95% confidence intervals (CI) for the association between pre-pregnancy weight status and adverse maternal and neonatal outcomes in Nova Scotian women with a singleton birth between 2004 and 2014 (n = 66,689). *adjusted for maternal age, area-level income quintile, area of residence, and parity.

MacInnis N, Woolcott CG, McDonald S, Kuhle S. **Population Attributable Risk Fractions of Maternal Overweight and Obesity for Adverse Perinatal Outcomes.** Sci Rep. 2016 Mar 10;6:22895.

Rischi materni: Antepartum

- Deficit nutrizionali
- Diabete gestazionale NB raccomandato lo screening
- Ipertensione gestazionale/preclampsia NB BMI ≥ 35
- Limitazione nell'incremento di peso

Overcash RT1, Lacoursiere DY. **The clinical approach to obesity in pregnancy**
Clin Obstet Gynecol. 2014 Sep;57(3):485-500

- Additional risk factors include:
  - first pregnancy,
  - previous pre-eclampsia,
  - 10 years since last baby,
  - 40 years,
  - family history of pre-eclampsia,
  - booking diastolic BP 80mmHg,
  - booking proteinuria 1+ on more than one occasion or 0.3g/24 hours,
  - multiple pregnancy,
  - antiphospholipid antibodies,
  - pre-existing Hypertension,
  - renal disease,
  - diabetes.

Royal College of Obstetricians and Gynaecologists

Setting standards to improve women's health

Centre for Maternal and Child Enquiries

Improving the health of mothers, babies and children

Inviare subito a Centro di Gravidanza a Rischio

Royal College of Obstetricians and Gynaecologists

Setting standards to improve women's health

Centre for Maternal and Child Enquiries

Improving the health of mothers, babies and children

- Women with a booking BMI 35 with no additional risk factor can have community monitoring for preeclampsia:
  - minimum of 3 weekly intervals between 24 and 32 weeks gestation;
  - 2 weekly intervals from 32 weeks to delivery.

Rischi materni: Antepartum

Maternal abdominal subcutaneous fat thickness as a predictor for adverse pregnancy outcome: a longitudinal cohort study

NJ Kennedy.[a,b] MJ Peek.[a,c] AE Quinton.[a,c,d] V Lanzarone.[e] A Martin.[f] R Benzie.[a,b] R Nanan[a,c]

- Spessore sottocutaneo più predittivo per complicanze materne rispetto a BMI
- Indicatore di obesità centrale
- Stato di infiammazione cronica

Kennedy NJ, Peek MJ1, Quinton AE, Lanzarone V, Martin A, Benzie R1, Nanan R
Maternal abdominal subcutaneous fat thickness as a predictor for adverse pregnancy outcome: a longitudinal cohort study. BJOG. 2016 Jan;123(2):225-32

Rischi materni: Antepartum

- Limitazione nel incremento di peso

The 2009 Institute of Medicine recommendations for total weight gain during pregnancy

Pre-pregnancy BMI (kg/m^2)	Recommended gestational weight gain (kg)
Underweight (< 18.5)	12.5 - 18
Normal weight (18.5 – 24.9)	11.5 - 16
Overweight (25 – 29.9)	7 – 11.5
Obese (≥ 30)	5 – 9

Rischi materni: Antepartum

- Limitazione nel incremento di peso

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

COMMITTEE OPINION

Number 548 • January 2013 *Reaffirmed 2015*

Committee on Obstetric Practice

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

Weight Gain During Pregnancy

and postpartum weight retention (10, 12, 13). For an obese pregnant woman who is gaining less weight than recommended but has an appropriately growing fetus, no evidence exists that encouraging increased weight gain to conform with the updated IOM guidelines will improve maternal or fetal outcomes. For more information, see

Rischi materni: intrapartum

- Rischio maggiore di gravidanza oltre il termine
- Maggior rischio di fallimento di un'induzione elettiva del travaglio di parto
- I stadio del travaglio più lento
  - La nullipare obese impiegano in media 1,2 h in più per raggiungere una dilatazione di 6 cm.
  - Le pluripare obese impiegano più tempo nel raggiungere una dilatazione critica di 6 cm.

Kominiarek MA1, Zhang J, Vanveldhuisen P, Troendle J, Beaver J, Hibbard JU. **Contemporary labor patterns: the impact of maternal body mass index.** Am J Obstet Gynecol. 2011 Sep;205(3):244.e1-8.

Carpenter JR **Intrapartum Management of the Obese Gravida**. Clin Obstet Gynecol. 2016 Mar;59(1):172-9.

Rischi materni: intrapartum

Contrattilità miometriale difettosa?

Studi in vitro dimostrano che le adiponectine come leptina e visfatina, nonché colesterolo LDL inibiscono la contrattilità delle fibrocellule miometriali

Jie Zhang1, Kendrick A, Quenby S, Wray S **Contractility and calcium signaling of human myometrium are profoundly affected by cholesterol manipulation: implications for labor?** Reprod Sci. 2007 Jul;14(5):456-66.

Mumtaz S, AlSaif S, Wray S, Noble K. **Inhibitory effect of visfatin and leptin on human and rat myometrial contractility.**

Rischi materni: intrapartum

- Minor rischio di parto pretermine spontaneo
- .....ma maggior rischio di indicazione al parto pretermine elettivo

Carpenter JR **Intrapartum Management of the Obese Gravida**. Clin Obstet Gynecol. 2016 Mar;59(1):172-9.

Rischi materni: intrapartum

- Difficoltà nell'eseguire monitoraggio cardiotocografico:
  - STAN
- Complicanze anestesiologiche
  - Reperire accessi venosi
  - Eseguire anestesia subdurale e peridurale
  - Intubazione
- Distocia di spalla

Overcash RT1, Lacoursiere DY. **The clinical approach to obesity in pregnancy**
Clin Obstet Gynecol. 2014 Sep;57(3):485-500

Rischi materni: intrapartum

- Taglio cesareo emergente più frequente
  - Arresto della progressione del travaglio
  - Sproporzione feto pelvica
- … e più difficoltoso:
  - Strutture adeguate
  - Tempi operatori più lunghi
  - Maggior perdita di sangue
  - Rischio di deiscenza della ferita chirurgica
- VBAC maggior rischio di fallimento

Faucett AM1, Metz TD. **Delivery of the Obese Gravida.** Clin Obstet Gynecol. 2016 Mar;59(1):180-92.

Overcash RT1, Lacoursiere DY. **The clinical approach to obesity in pregnancy** Clin Obstet Gynecol. 2014 Sep;57(3):485-500

Rischi materni: intrapartum

- Taglio cesareo emergente più frequente
- … e più difficoltoso:
  - Strutture adeguate
  - Tempi operatori più lunghi
  - Maggior perdita di sangue
  - Rischio di deiscenza della ferita chirurgica

Chiudere il sottocute se > 2 cm riduce il rischio di formazione di sieromi, ma non di ematomi ed infezioni

Faucett AM1, Metz TD. **Delivery of the Obese Gravida.** Clin Obstet Gynecol. 2016 Mar;59(1):180-92.

Overcash RT1, Lacoursiere DY. **The clinical approach to obesity in pregnancy** Clin Obstet Gynecol. 2014 Sep;57(3):485-500

Rischi materni: postpartum

- Emorragia postpartum
  - Accessi venosi adeguati
  - Uterotonici a pronta disposizione
  - **NB gestione attiva del III stadio**

- Tromboembolismo
  - Rischio 4 volte maggiore
  - Considerare tromboprofilassi meccanica e farmacologica

Faucett AM1, Metz TD. **Delivery of the Obese Gravida.** Clin Obstet Gynecol. 2016 Mar;59(1):180-92.

Antenatal assessment and management (to be assessed at booking and repeated if admitted)

Any previous VTE except a single event related to major surgery

→ **HIGH RISK**

Requires antenatal prophylaxis with LMWH

Refer to trust-nominated thrombosis in pregnancy expert/team

Hospital admission

Single previous VTE related to major surgery

High-risk thrombophilia + no VTE

Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy, nephrotic syndrome, type I DM with nephropathy, sickle cell disease, current IVDU

Any surgical procedure e.g. appendicectomy

OHSS (first trimester only)

→ **INTERMEDIATE RISK**

Consider antenatal prophylaxis with LMWH

Obesity (BMI > 30 kg/m^2)

Age > 35

Parity ≥ 3

Smoker

Gross varicose veins

Current pre-eclampsia

Immobility, e.g. paraplegia, PGP

Family history of unprovoked or estrogen-provoked VTE in first-degree relative

Low-risk thrombophilia

Multiple pregnancy

IVF/ART

→ **Four or more risk factors: prophylaxis from first trimester**

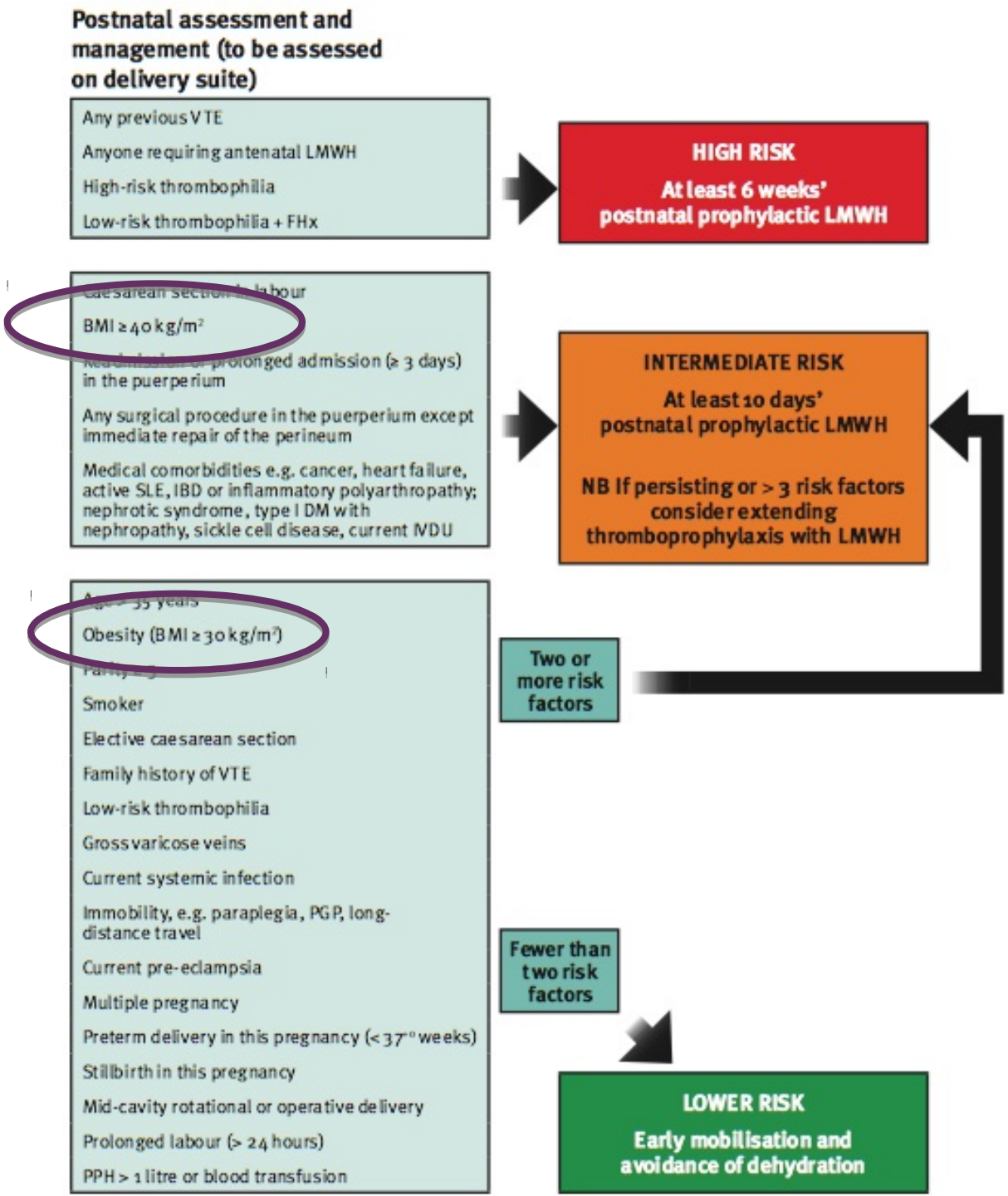
Three risk factors: prophylaxis from 28 weeks

Transient risk factors: Dehydration/hyperemesis; current systemic infection; long-distance travel

Fewer than three risk factors

→ **LOWER RISK**

Mobilisation and avoidance of dehydration


Postnatal assessment and management (to be assessed on delivery suite)
Any previous VTE
Anyone requiring antenatal LMWH
High-risk thrombophilia
Low-risk thrombophilia + FHx
HIGH RISK
At least 6 weeks' postnatal prophylactic LMWH
BMI ≥ 40 kg/m²
in the puerperium
Any surgical procedure in the puerperium except immediate repair of the perineum
Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy; nephrotic syndrome, type I DM with nephropathy, sickle cell disease, current IVDU
INTERMEDIATE RISK
At least 10 days' postnatal prophylactic LMWH
NB If persisting or > 3 risk factors consider extending thromboprophylaxis with LMWH
Obesity (BMI ≥ 30 kg/m²)
Smoker
Elective caesarean section
Family history of VTE
Low-risk thrombophilia
Gross varicose veins
Current systemic infection
Immobility, e.g. paraplegia, PGP, long-distance travel
Current pre-eclampsia
Multiple pregnancy
Preterm delivery in this pregnancy (< 37 weeks)
Stillbirth in this pregnancy
Mid-cavity rotational or operative delivery
Prolonged labour (> 24 hours)
PPH > 1 litre or blood transfusion
Two or more risk factors
Fewer than two risk factors
LOWER RISK
Early mobilisation and avoidance of dehydration

Rischi materni: postpartum

- Maggior fallimento nell'allattamento al seno
- Depressione post partum

Faucett AM1, Metz TD. **Delivery of the Obese Gravida.** Clin Obstet Gynecol. 2016 Mar;59(1):180-92.

Rischi fetali: antepartum

- Maggior rischio di morte fetale intrauterina in particolare dopo la 40° settimana

- Macrosomia fetale / LGA fetus
  - La stima del peso a termine di gravidanza ha un rischio di errore troppo grande
  - L'induzione elettiva del travaglio per sospetta macrosomia non riduce il rischio di distocia di spalla.

Carpenter JR **Intrapartum Management of the Obese Gravida**. Clin Obstet Gynecol. 2016 Mar;59(1):172-9.

Macrosomia fetale / LGA fetus: **patogenesi**

Obesità materna

Età materna

Eccessivo incremento ponderale

Tanvig M. **Offspring body size and metabolic profile - effects of lifestyle intervention in obese pregnant women.** Dan Med J. 2014 Jul;61(7)

Rischi fetali: antepartum

- Secondo le linee guida ACOG il cesareo elettivo per sospetta macrosomia è da considerare solo se:
  - Il peso stimato è > 5000 g;
  - Il peso stimato è > 4500 g nelle gravide diabetiche

Chatfield J. **ACOG issues guidelines on fetal macrosomia. American College of Obstetricians and Gynecologists.** Am Fam Physician. 2001 Jul 1;64(1):169-70.

Rischi fetali: antepartum

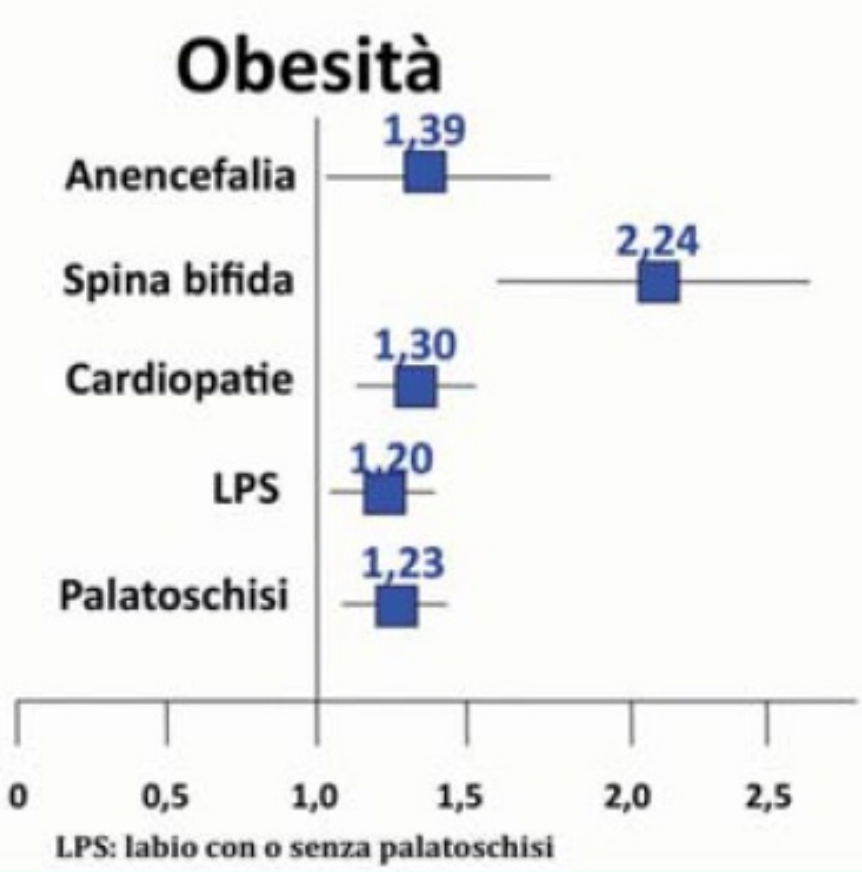
- Malformazioni fetali

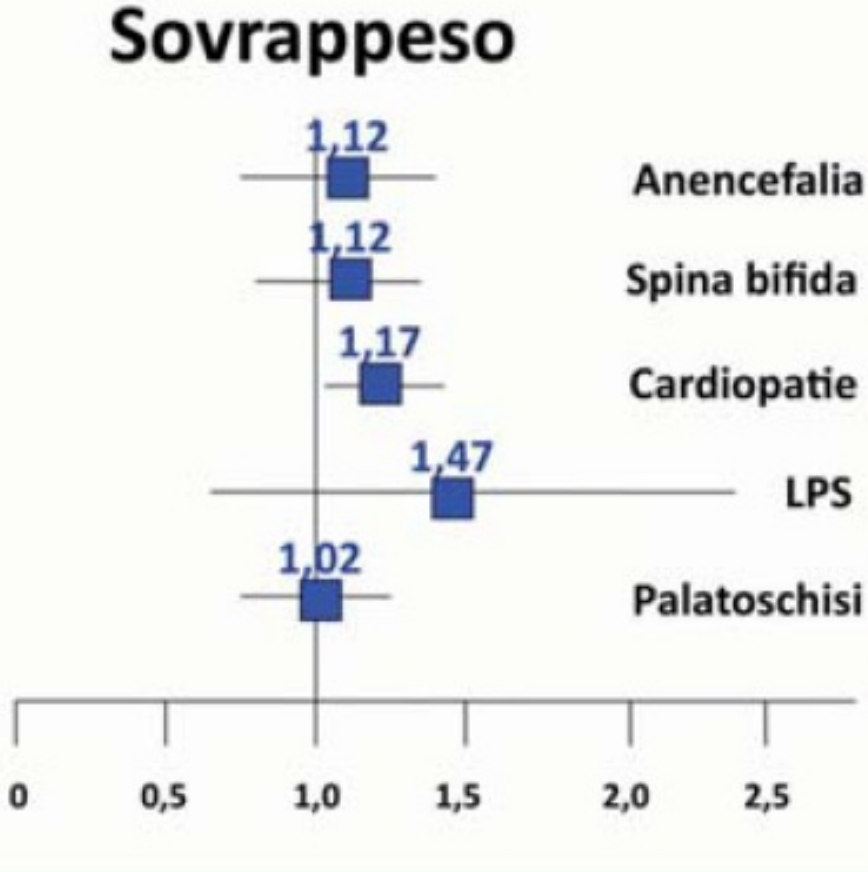
- In particolare: Difetti del tubo neurale

- La supplementazione di acido folico standard potrebbe non essere sufficiente

- Consigliato Acido Folico 5 mg/die

Rischi fetali: antepartum





Raccomandazioni per il counseling preconcezionale Centro per la Prevenzione e Controllo delle Malattie, Ministero della Salute. Luglio 2011

Rischi fetali: intrapartum

- Distocia di spalla e traumatismi nel periodo espulsivo
- Basso Apgar score
- Ricoveri più frequenti in TIN

Rischi fetali: postpartum
a breve termine

PHD THESIS DANISH MEDICAL BULLETIN

Offspring body size and metabolic profile – Effects of lifestyle intervention in obese pregnant women

Mette Tanvig

- Massa grassa aumentata alla nascita
- Aumneto del contenuto di lipidi intraddominali ed intraepatici
- Insulino-resistenza già alla nascita

Tanvig M. **Offspring body size and metabolic profile - effects of lifestyle intervention in obese pregnant women.** Dan Med J. 2014 Jul;61(7)

Rischi fetali: postpartum
a lungo termine

PHD THESIS DANISH MEDICAL BULLETIN

Offspring body size and metabolic profile – Effects of lifestyle intervention in obese pregnant women

Mette Tanvig

- Sovrappeso e obesità infantile **NB Fumo in gravidanza**
- Ipertensione
- Insulino-resistenza e sindrome metabolica in adolescenza
- Asma
- Disturbi neuro-comportamentali

Tanvig M. **Offspring body size and metabolic profile - effects of lifestyle intervention in obese pregnant women.** Dan Med J. 2014 Jul;61(7)

Il ciclo dell'obesità

PHD THESIS DANISH MEDICAL BULLETIN

Offspring body size and metabolic profile – Effects of lifestyle intervention in obese pregnant women

Mette Tanvig

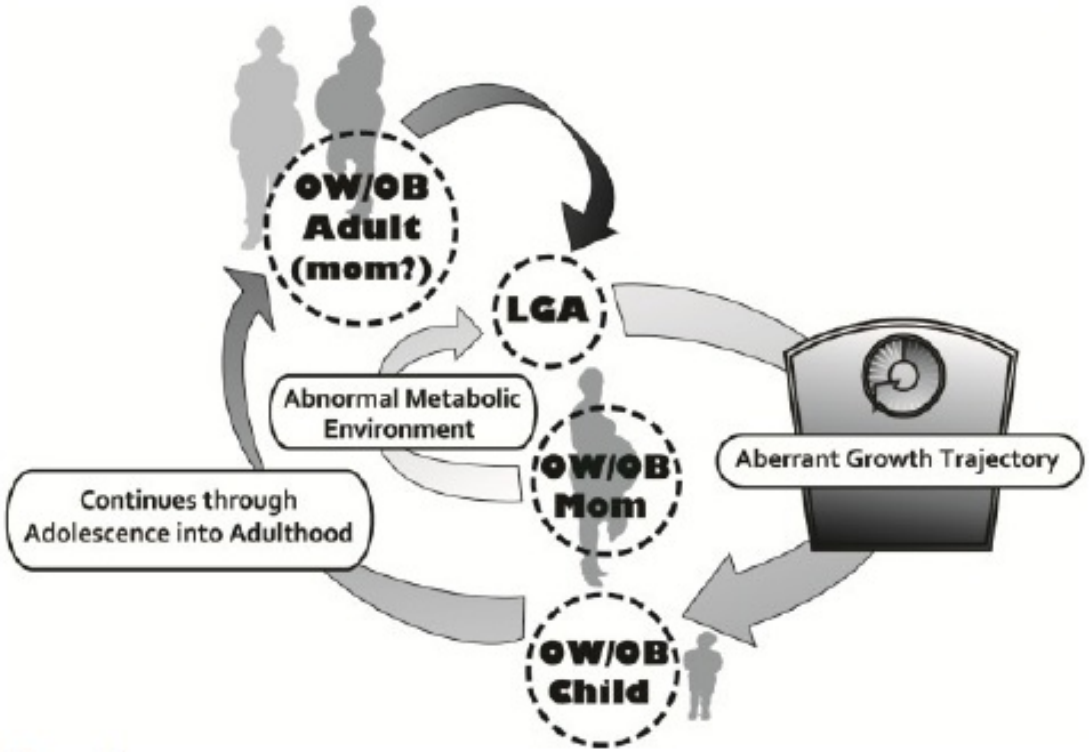


Figure 2
The intergenerational cycle of obesity

Tanvig M. **Offspring body size and metabolic profile - effects of lifestyle intervention in obese pregnant women.** Dan Med J. 2014 Jul;61(7)

Cosa fare?

- Periodo ottimale per intervenire perché
  - le pazienti sono motivate
  - I controlli medici sono frequenti

Thangaratinam S et al. **Interventions to reduce or prevent obesity in pregnant women: a systematic review.** Health Technol Assess. 2012 Jul;16(31):iii-iv, 1-191. doi: 10.3310/hta16310.

Cosa fare?

McCarthy E et al.
Self-weighing and simple dietary advice for overweight and obese pregnant women to reduce obstetric complications without impact on quality of life: a randomised controlled trial. BJOG. 2016 Feb 14.

Thangaratinam S et al. **Interventions to reduce or prevent obesity in pregnant women: a systematic review.** Health Technol Assess. 2012 Jul;16(31):iii-iv, 1-191

Cosa fare?

- Screening ecografico per malformazioni fetali

Grazie per l’attenzione