

MRI Pelvimetry coupled with the 3D evaluation of the birth canal by SIM37

A revolution in the management of deliveries?

Dr Albert Cohen
Dr Olivier Ami



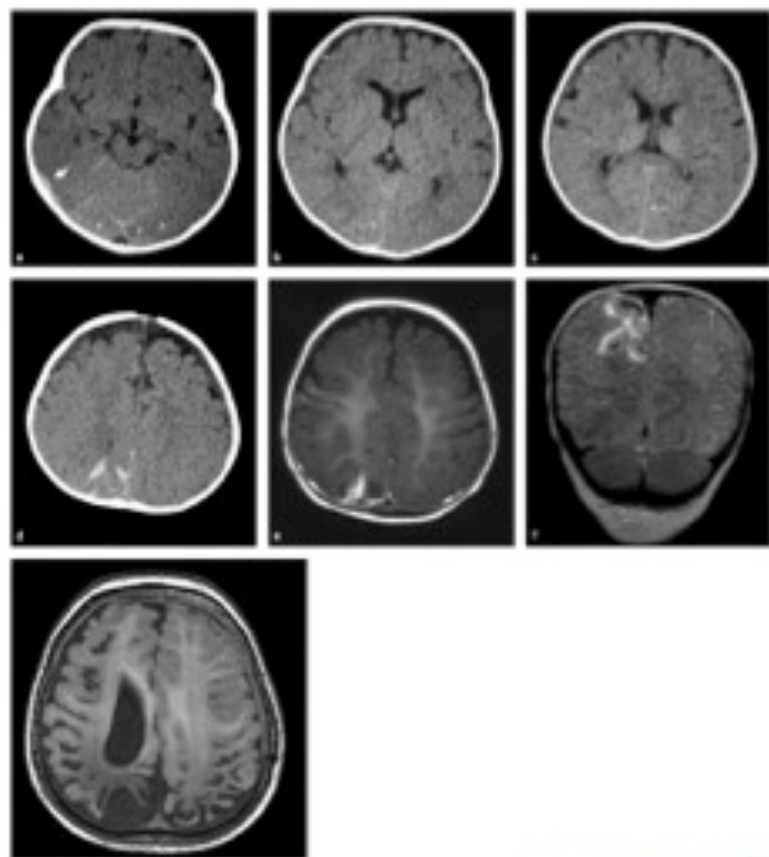
2015

Meeting with Dr. Olivier Ami, who founded the start-up Babyprogress and developed the SIM37 software allowing pregnancy simulation at 37 weeks of amenorrhea

SIM37
By Babyprogress



MRI of cerebral hemorrhage

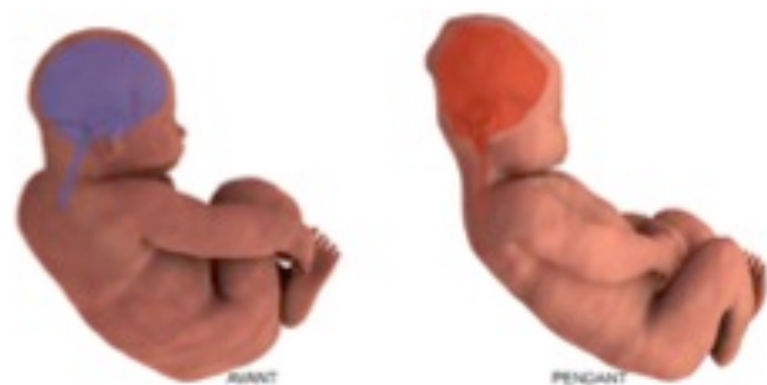


No silverman syndrome

Non traumatic birth Hemorrhage

Found 44% of head MRI of new born blocked in the birth canal

Sectional hemorrhages of the cerebral veins by compressions of the child's brain during childbirth



Cephalo-pelvic dystocia (1/2)

Incompatibility between the size of the woman's pelvis and the dimensions of the foetus including the head of the baby

We do not know yet how to predict CP disproportion



Cephalo-pelvic dystocia (2/2)

Cephalo-pelvic dystocia may cause

Childhood brain trauma

- Death
- Brain hemorrhage
- Skull fracture
- Anoxia
- Cervical trauma



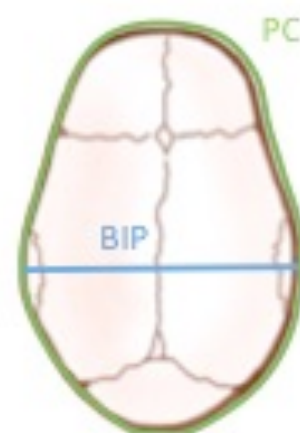
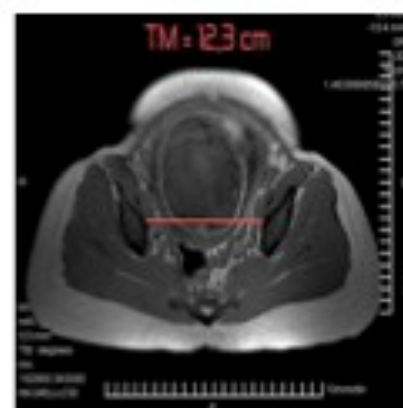
Prejudicial fetal suffering

Pelvic trauma in the mother through forced passage

- Urinary and anal incontinence
- Cystocele and late prolapse of the rectum
- Perineal sequelae responsible for chronic pain, dyspareunia
- Pain by dislocation of the coccyx (even for deliveries deemed to be eutocic)
- Wounds of the cervico-vaginal area (plaies)
- Uterine tearing (dechirure)
- Uterine atonia

Dr Benedicte Siman (ObGyn): « All these pathological situations generate significant morbidity for women and babies and cause the bulk of the workload for the caregivers in the delivery room (the bulk of activity) », this activity is extremely stressful »

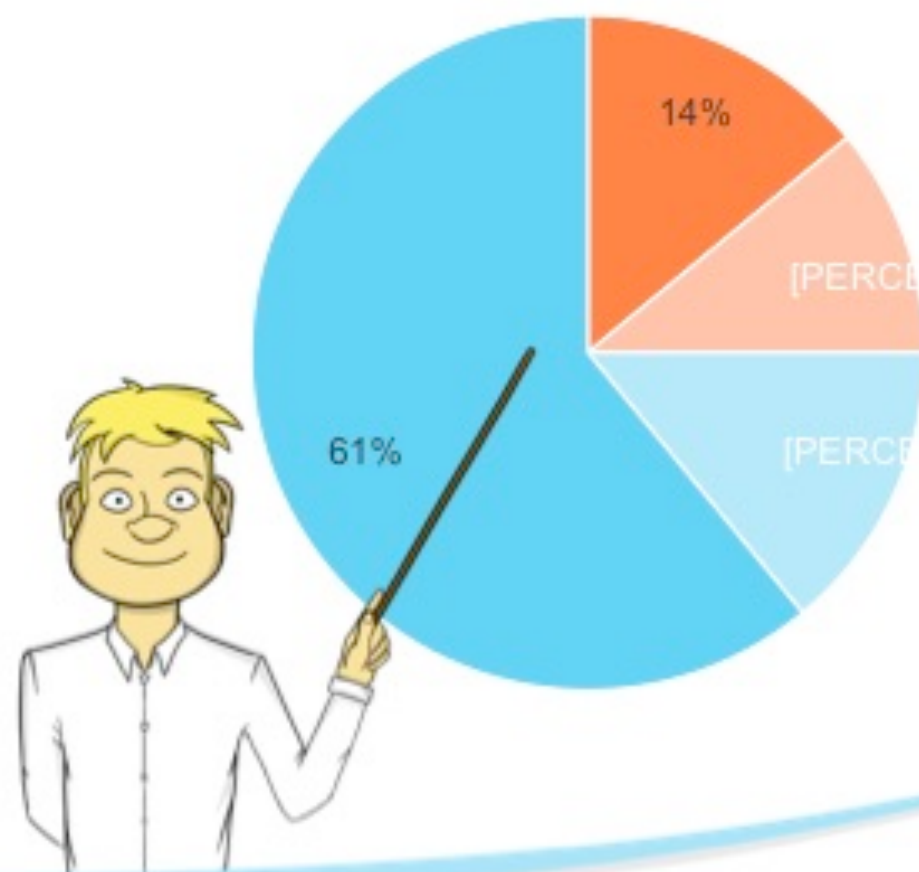
Classical pelvimetry used by ObGyns is a bad exam to assess the risk of CP dystocia



- PRP : Promonto-rétro-pubien
- SCSP : Sous-Coxo-Sous-Pubien
- TM : Transverse Médian
- BS : Bi-Sciatique

- BIP : Bipariétal
- PC : Périmètre crânien
- Table externe à table externe

Birth methods distribution before the use of SIM37



Current distribution of birth methods in France

61% : Normal vaginal birth

14%: C-section planned prior to birth

- Placenta praevia
- Cephalo-pelvic dystocia diagnosed before the birth
- Transverse position of the foetus

11%: Problematic labor requiring extraction of the baby with vacuum extraction, forceps, episiotomy etc.

14% **Emergency C-section**

- **Baby blocked in the birth canal**
- **Heart rate slowing down**
- **Foetal suffering signs**

Proof of concept with ELSAN Clinique de l'Estrée and RIPN



- 2,000 births per year
- Implementation of SIM37 instead of pelvimetry by scanner
- Substitution of pelvimetric scanners by a Pelvic MRI coupled with SIM37 simulation
- Study based on 700 patients

SIM37
By Babyprognosis

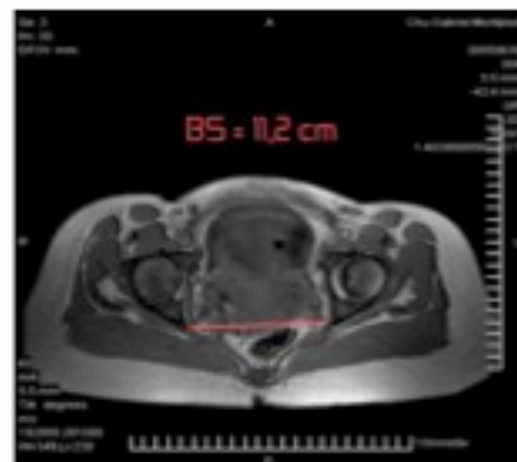
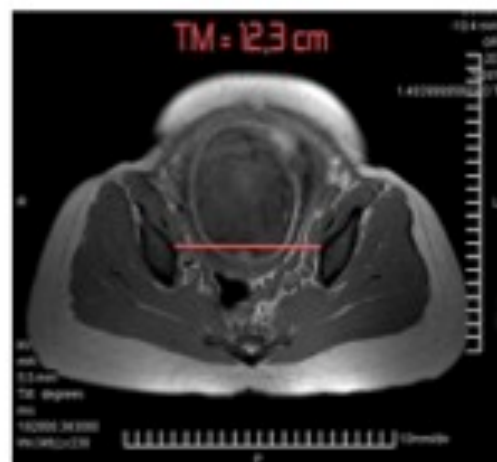
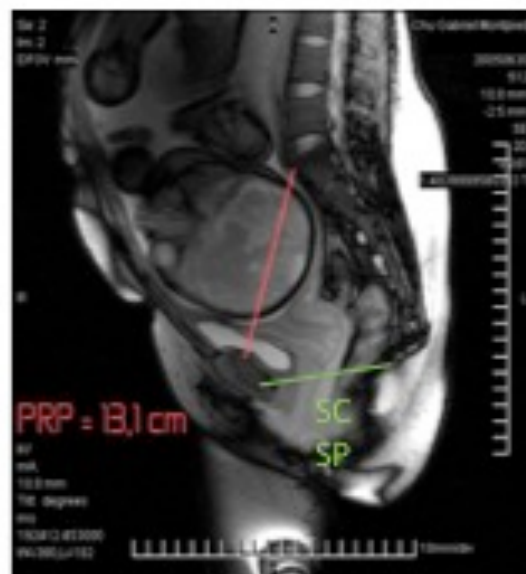
Babyprogress_English.mp4



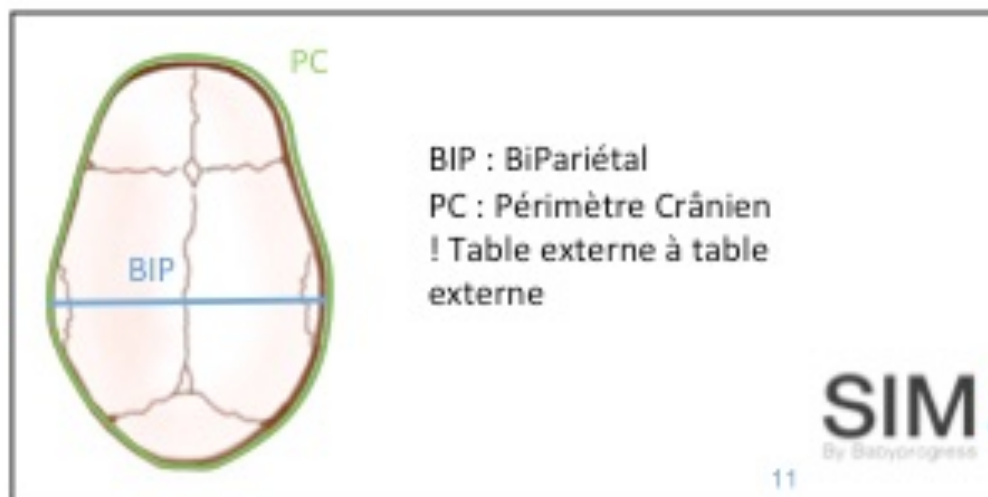
The image stack is then sent to
Babyprogress via a secure and encrypted channel

1:19 / 2:52

SIM37
By Babyprogress



PRP : Promonto-rétro-pubien
 SCSP : Sous-Coxo-Sous-Pubien
 TM : Transverse Médian
 BS : Bi-Sciatique



SIM 37
 By Babyprogress

IRM Pelvimétrie

Indication	<ul style="list-style-type: none">■ Pelvimétrie par IRM du pelvis
Appareil	<ul style="list-style-type: none">■ IRM General Electric – 1.5 Tesla■ Mise en service en août 2011
Technique	<ul style="list-style-type: none">■ Acquisition THRIVE dans les trois plans de l'espace et AX T2 Spair encéphalique■ Durée des séquences: moins de 5 minutes
Résultats	<ul style="list-style-type: none">■ Détroit supérieur :<ul style="list-style-type: none">- Diamètre promonto-rétro-pubien: 122 mm (Nle >105 mm)- Diamètre transverse médian : 134 mm (Nle > 125 mm)- indice de Magnin: 25.6 (Nle > 230 mm).■ Détroit moyen: diamètre bi-sciatique: 113mm (Nle 100-105 mm).■ Détroit inférieur: diamètre sous sacro, sous pubien: 116 mm■ Contenu utérin: Présentation : céphalique dos à droite. PC estimé à 35,3cm <p>Les données biométriques sont à comparer aux données de l'examen obstétrical. Cet Examen ne permet pas une étude morphologique du fœtus qui est assuré par les échographies obstétricales.</p>

Data processing allowing final scoring of the VTOL

SIM37 analyzes data transmitted through the MRI and produces a detailed report with final scoring of the VTOL (Virtual Trial of Labor)

VTOL	Estimated risk with SIM37 and proposed management
1	Proposed management = Normal childbirth in the respect of usual security guidelines and good practices.
2	Proposed management = a childbirth in normal conditions can be expected with a good prognosis, but requires an obstetrician to be available
3	Proposed management = a childbirth in normal conditions can be expected with a good prognosis, but requires an obstetrician to be available to intervene rapidly
4	Proposed management = a trial of labor without doggedness can be proposed and discussed with the patient, and requires an obstetrician to be available during labor and present during expulsion phases; instrumental extraction of low difficulty

VTOL	Estimated risk with SIM37 and proposed management
5	Proposed management = a trial of labor without doggedness can be proposed and discussed with the patient, and requires an obstetrician to be available during labor and present during expulsion phases; instrumental extraction of mild difficulty
6	Proposed management = a trial of labor without doggedness can be proposed and discussed with the patient, and requires an obstetrician to be available during labor and present during expulsion phases ; instrumental extraction of potential important difficulty
7	Proposed management = A planned C-section can be proposed and discussed with the patient. In the case of fetal heart rythm abnormalities, an instrumental extraction upper the middle bri mis not recommended.
8	Proposed management = A planned C-section can be proposed and discussed with the patient. In the case of fetal heart rythm abnormalities, an instrumental extraction upper the middle bri mis not recommended.

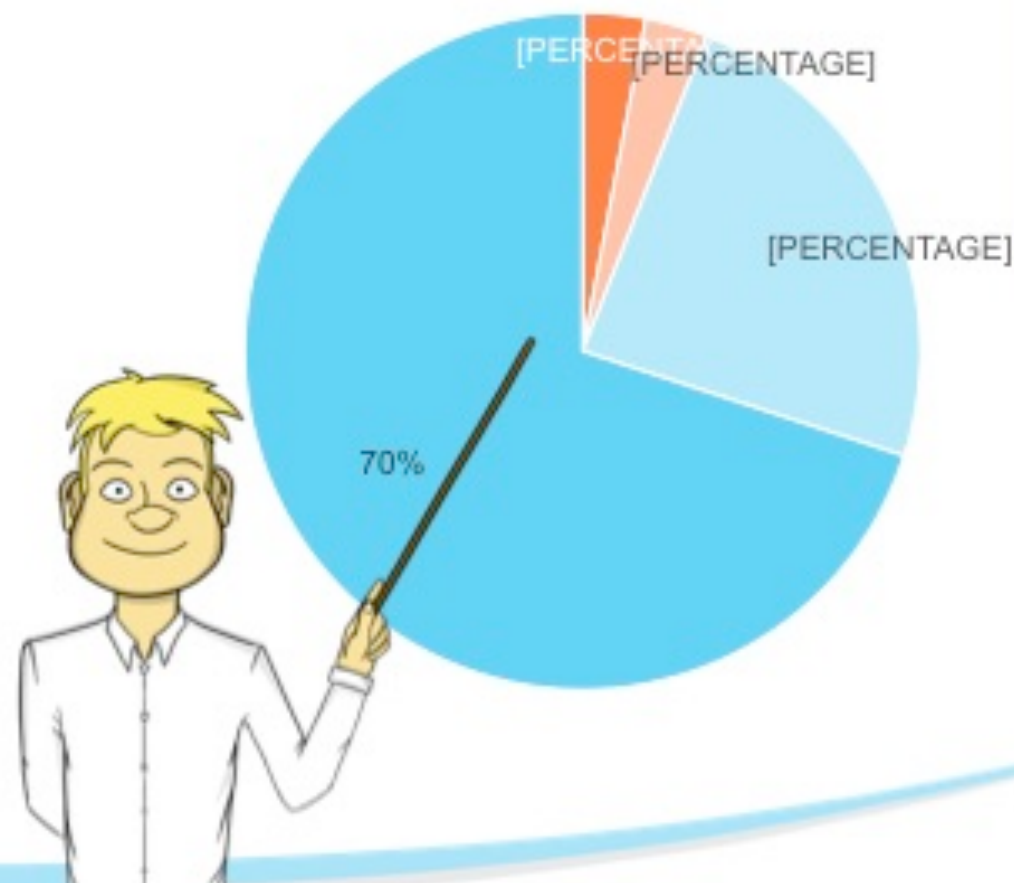
After the USE of SIM37

SIM37 benefits

SIM37 allows to compare the Mothers birth canal volume to the baby's cranial volume at 37, 38, 39 and 40 weeks of amenorrhea

- SIM 37 allows to avoid a useless C-section
- SIM 37 allows to plan serenely for a C-section, in agreement with the future parents
- SIM 37 allows to decrease drastically the rate of emergency C-sections

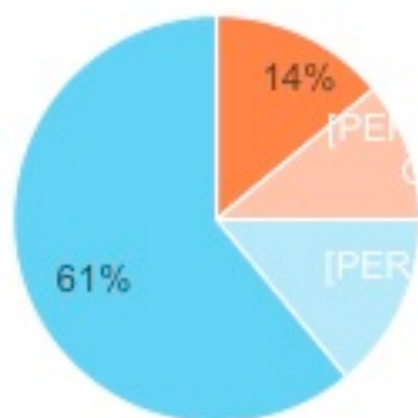
- Emergency C-section
- Instrumental extraction
- Planned C-section
- Normal vaginal delivery



SIM37
By Gabyprogress

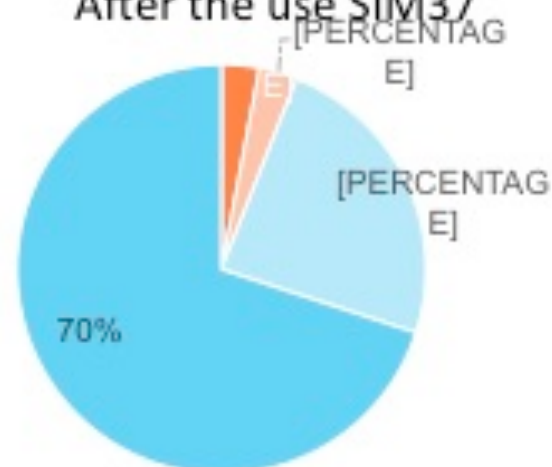
Results comparison

Before the use SIM37



- Emergency C-section
- Instrumental extraction
- Planned C-section
- Normal vaginal delivery

After the use SIM37



- Emergency C-section decreases from 14% to 3%
- Instrumental extraction decreases from 11% to 3%
- Normal vaginal delivery increases from 61% to 70%

Conclusion

SIM37:

- ✓ Is a Software tool to guide decision making for deliveries
- ✓ Avoids useless C-sections
- ✓ Allows to decrease dramatically the percentage of emergency C-sections
=> allows to reorganize the ObGyn department
- ✓ Protects Children's brains by reducing brain trauma
- ✓ Protects the Mother's Pelvis

SIM37
By Babyprogress

Dr Olivier Ami
www.babyprogress.fr
olivier.ami@babyprogress.fr


RIPN
Réseau d'Imagerie Paris Nord

Dr Albert Cohen
www.ripn.fr
alwcohen@gmail.com

- Césarien extra péritonéale : <http://www.cesarienneextraperitoneale.fr/>
 - French Ambulatory Cesarean Section : FAUCS
 - « La technique de césarienne extra-péritonéale , mise au point par le Docteur Denis FAUCK dans les années 2000, ne nécessite **pas de sonde urinaire** et permet d'**enlever la perfusion**, de boire et manger 2 heures après l'intervention. Elle permet également de **se lever confortablement dans les 4 heures** suivant l'opération, de **prendre une douche** le jour même.
- Cette liberté de mouvement sans grande douleur permet à la maman de s'occuper de son bébé tout de suite (le prendre dans les bras, le caliner, le nourrir, le changer, lui donner son premier bain, le garder avec soi la première nuit), exactement comme une maman qui a accouché naturellement.
 - <http://www.docturbenedictesimon.com/cesarienne-extra-peritoneale/claire.html>

SIM37
By Babyprogress



SIM37
By Babyprogress