NAVIS-EX - Progression analysis, Registration editor and Optic disc shape editor

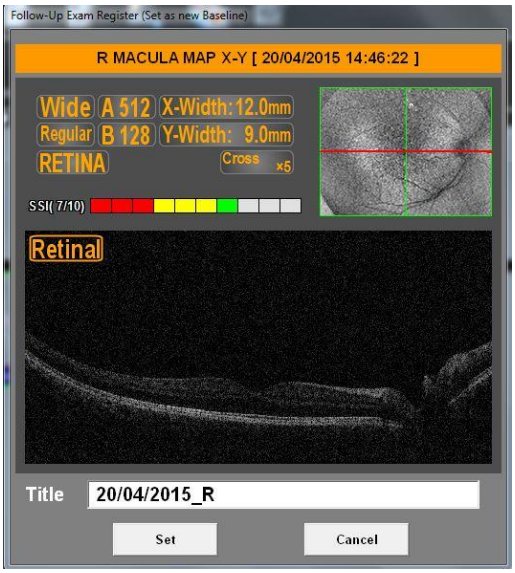
Progression Analysis / Follow-up

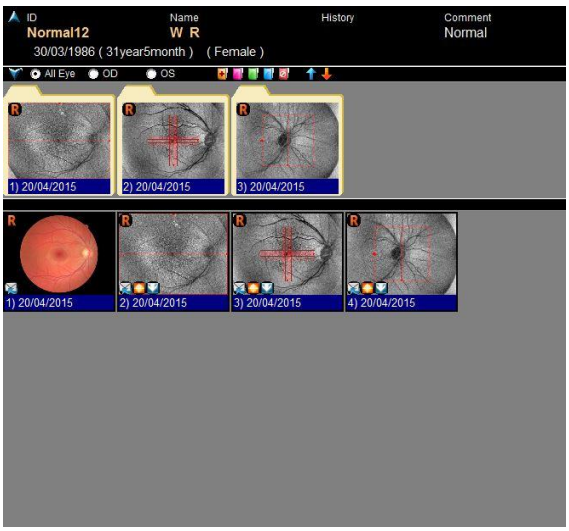
A single OCT capture session, whilst informative, may not be able to definitively give you enough information to decide if the Patient has pathology present, or just a variation of 'normal'. By performing multiple capture sessions, the NAVIS-EX software can accurately display even if there are subtle changes in the structures scanned.

NB. The NAVIS-EX software can '*Follow-up'* any comparable scans, but to make the procedure worthwhile there does need to be sufficient time between scans for progression to occur if there is going to be any. For example, it is not worthwhile scanning the Patient again after one week if you want to compare scans for glaucomatous changes.

The first process is to register a scan to Baseline. This is normally the earliest scan on record, but it also must be a reliable scan containing good data (*see RSD troubleshooting*). Select and drag the scan into the grey box just above the thumbnail images.

Fig. 1 – Register to Baseline





Highlight the scan you wish to examine and click 'follow-up' in the toolbar. Next select all the comparable scans from the list on the LHS of the screen and NAVIS-EX will display them in chronological order with any relative changes.

Alternatively, once the baseline scan has been set in the Px record, select all the RE macula maps for example, and select 'follow-up' and the progression analysis page will be displayed with the data.

Fig. 2 – GCC Progression analysis R Eye

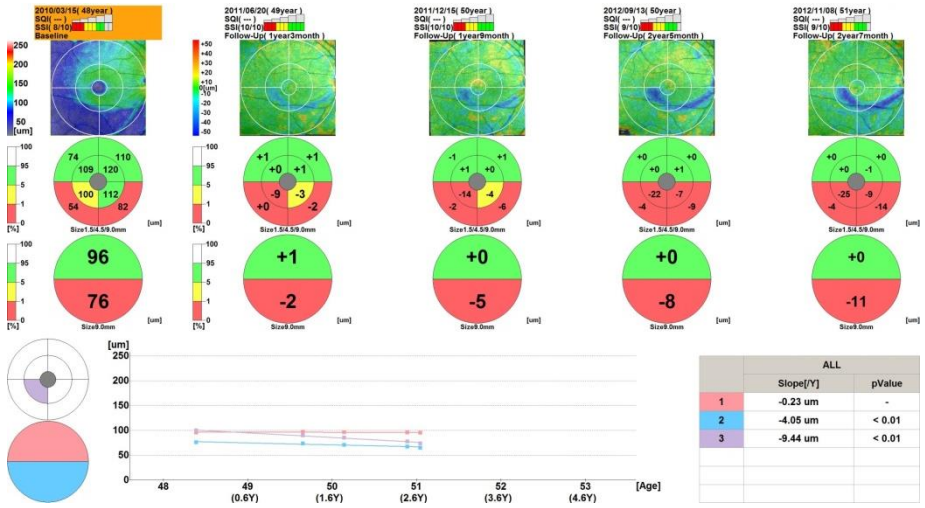
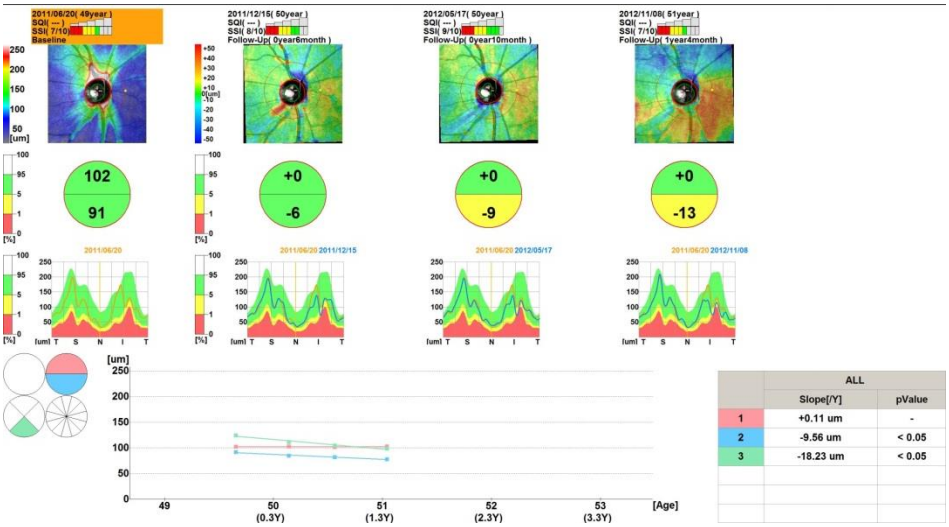


Fig. 3 – RNFL Progression analysis R Eye ONH

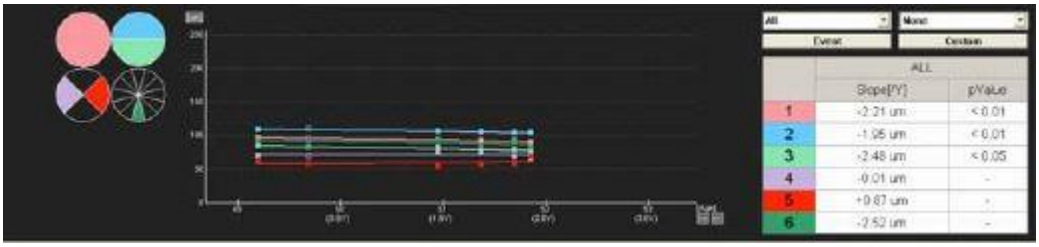


As you can see, given enough scans it is very easy to monitor any progression. In addition, behind the scenes there is a great deal of statistical analysis to determine if the data is clinically significant. If so, the probability or 'p-value' will be displayed.

You can then print or export the report as desired.

TIP! – If you are monitoring a suspect Patient in-house, being able to provide an Ophthalmologist with progression data is highly valuable, **BUT** you do need to be aware of local referral pathways / criteria.

Fig. 4 – Progression analysis graph and 'p-value'



TIP! – The p-values will only ever be <0.05 or <0.01. If the p-value is <0.05, then there is a <5% probability the changes are '*normal*'. If the p-value is <0.01 then there is a <1% probability the changes are '*normal*'. If there is no p-value, then there has not been a clinically significant change in tissue thickness and the eye may be a normal variation, or there is not enough data to compare (*the more scan data you can give NAVIS-EX, the better*) , or the time between the scans is not sufficient. Remember all devices are prone to some repeatability errors, particularly on disc scans which are generally considered less reliable than macula scans.

TIP! - It is even possible to create custom graphs to display various parameters (eg. Visual fields, IOP's) alongside the existing graphs to check for any correlation. The inputting of the data is completely manual (*section 11.3.3 of the NAVIS-EX operators manual*). Likewise, it is possible to input an 'event' into existing graphs (i.e. some kind of intervention – treatment, etc.). The trends can then be compared before and after the event. You can add measurements such as Visual Acuities (VA's), IOP's (intra ocular pressures) and more.

TIP! – For the progression analysis function to work, the baseline and follow-up scans need to have ***exactly*** the same parameters. Any differences between the scans and the process won't work.

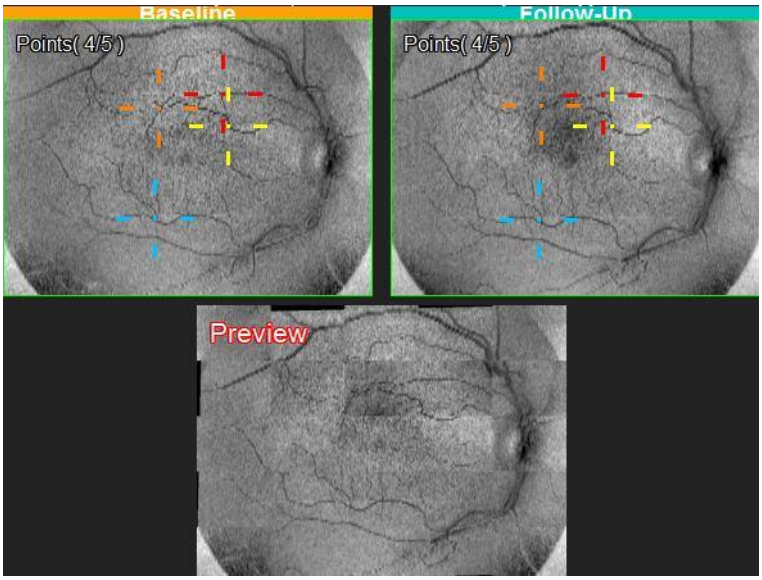
TIP! – The baseline scan and *at least* 2 follow-up scans are advised for progression analysis to be worthwhile.

Registration Editing

Occasionally, if NAVIS-EX doesn't recognise enough data points in a scan when trying to perform follow-up, it may need to be manually manipulated. By manually selecting at least three corresponding points on the two images, NAVIS-EX will then re-analyse the data.

TIP! – The easiest method of finding corresponding positions is to use well demarcated vessel bifurcations or crossings.

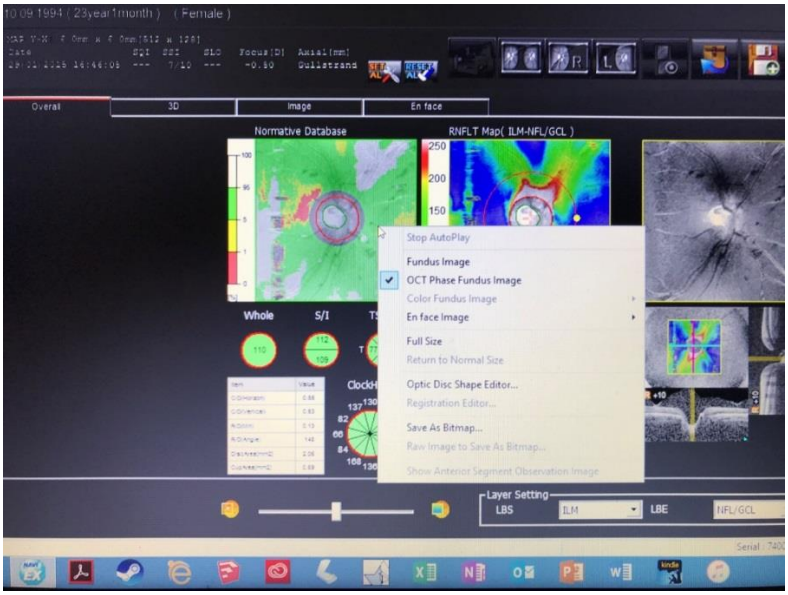
Fig. 5 – Registration editing



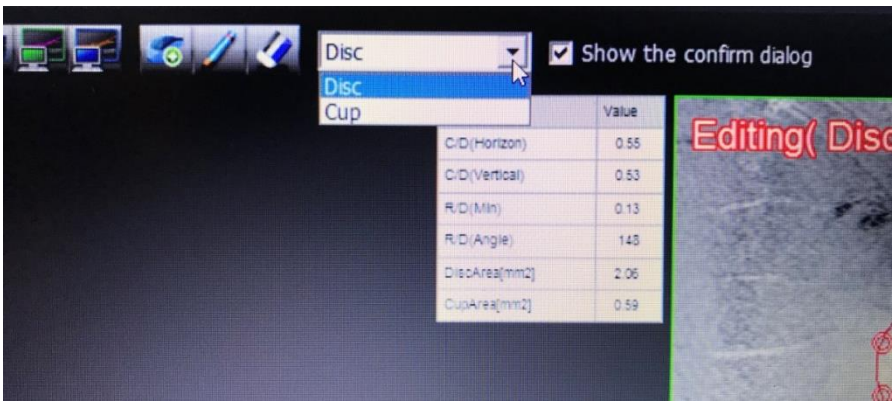
Correcting Optic Disc Errors / Optic disc shape editor

Sometimes, where NAVIS-EX hasn't recognised the disc margin or the cup, you won't be given a CD ratio on the Disc map. Also, occasionally, the disc will be incorrectly 'drawn' by the OCT device as it may be unable to distinguish between PPA or myopic degeneration around an ONH. In these circumstances, you can right click on the ONH thickness map and select 'Optic disc shape editor'.

Fig. 6 – Optic Disc Shape Editor

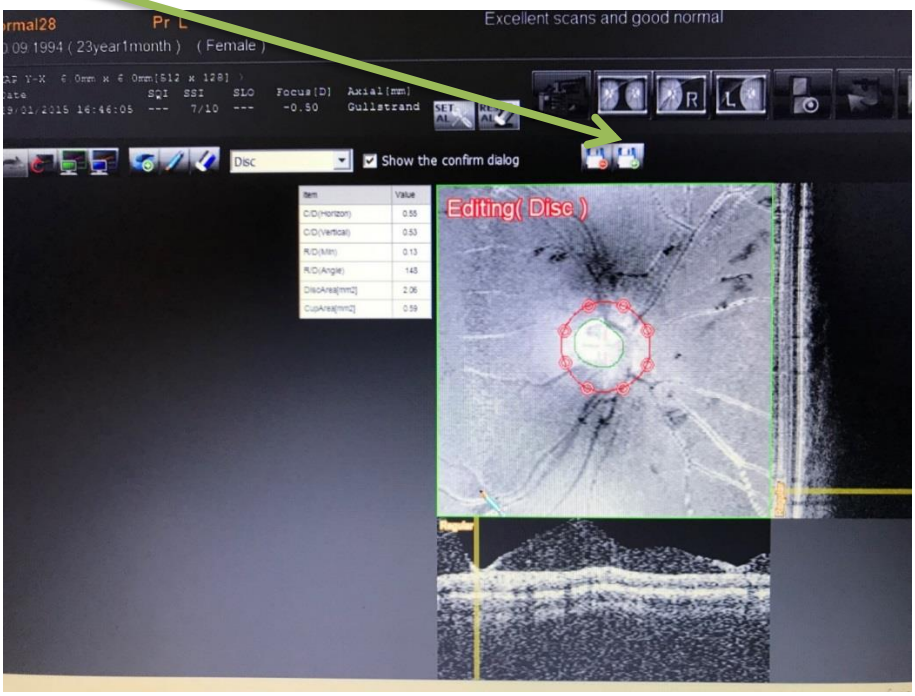


This will bring you to the Disc editor screen. Here, you can select either the disc or the cup to add or edit.



You can ‘grab’ each point on the edit screen and drag it to the correct location or click anywhere to add another point to join the line to. Eventually, you should be able to draw a shape similar to the disc margin or the cup.

Then click the Save icon to exit the editor and keep the changes or exit without saving otherwise.



Once you have saved the edit, NAVIS-EX should be able to calculate the disc parameters.

TIP! – Often it is easier to re-try scan capture to try and get better data.